PB87-105516

# Guidance for the Reregistration of Pesticide Products Containing Carbofuran as the Active Ingredient

(U.S.) Environmental Protection Agency
Washington, DC

18 Jul 84

U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

| | | | |
|---|---|---|---|
| **REPORT DOCUMENTATION PAGE** | 1. REPORT NO. | 2. | 3. Recipient's Accession No.<br>PB87 105516/AS |

4. Title and Subtitle
Guidance for the Reregistration of Pesticide Products Containing CARBOFURAN as the Active Ingredient.

5. Report Date
Issued July 18, 1984

6.

7. Author(s)
EPA, Office of Pesticide Programs, Registration Division

8. Performing Organization Rept. No.
540/RS-86- 166

9. Performing Organization Name and Address
US Environmental Protection Agency
Office of Pesticide Programs
Registration Division TS-767C
401 M Street, SW
Washington, D. C. 20460

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
Same as #9

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This document contains information regarding the reregistration of pesticide products containing the subject active ingredient. The document includes how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

17. Document Analysis a. Descriptors

Pesticides, standards, regulations, manufacturing, chemistry, toxicology, residues, ecology, path of pollutants.

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

| | | |
|---|---|---|
| 18. Availability Statement<br>Publicly Available | 19. Security Class (This Report)<br>Unclassified | 21. No. of Pages<br>1 |
| | 20. Security Class (This Page)<br>Unclassified | 22. Price |

(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

PB87-105516

# GUIDANCE FOR THE REREGISTRATION OF PESTICIDE PRODUCTS

CONTAINING

CARBOFURAN
(090601)

CAS 1563-66-2

AS THE ACTIVE INGREDIENT

Case No. 101

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS

WASHINGTON, D.C. 20460

July 18, 1984

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA. 22161

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# INTRODUCTION

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA Section 3(g), as amended in 1978, directs EPA to reregister all pesticides as expeditiously as possible. Each registrant of a manufacturing use product of the active ingredient who wishes to continue to sell or distribute that product must apply for reregistration.

To fulfill this Congressional mandate, we have established the Registration Standards program which will review all pesticide active ingredients first registered before January 1, 1977. These pesticides will be reviewed in use clusters which are prioritized on the basis of a ranking scheme giving preference to pesticides used on food and feed crops.

The Registration Standards program involves a thorough review of the scientific data base underlying pesticide registrations and an identification of essential but missing studies which may not have been required when the product was initially registered or studies that are now considered insufficient. Our reassessment results in the development of a regulatory position, contained in this document, on each pesticide and its uses. The regulatory position may require the registrant to modify product labels to provide additional precautionary statements, restrict the use of the pesticide to certified applicators, provide reentry intervals, modify uses or formulation types, specify certain packaging limitations, or other requirements to assure that proper use of the pesticide poses no potential adverse effects to human health or the environment.

The scientific review, which is not contained herein but is available upon request, concentrates on the technical grade of the active ingredient and identifies missing generic data. However, during the review of these data we are also looking for potential hazards that may be associated with the formulated (end-use) products that contain the active ingredient. If we find serious concerns, we will bring formulated products under the provisions of the Registration Standards program to the extent necessary to protect the public.

EPA has the authority under FIFRA §3(c)(2)(B) to require that certain registrants submit generic data that will answer our questions regarding the hazard that may result from the intended use of the pesticide under review. Further, §3(c)(2)(B) provides that these data are to be submitted by those registrants who do not qualify for the formulator's exemption [FIFRA §3(c)(2)(D)]. Normally, this means that the registrants who are responsible for filling the data gaps are the manufacturing-use product producers (basic suppliers of the active ingredient). However, end-use producers will not qualify for the formulator's exemption if the source of their active ingredient: (1) is not registered with EPA, and/or (2) is produced by the registrant's firm, or a firm which has ownership in common with the registrant's firm. These end-use producers can qualify for the formulator's exemption if they change their source of supply to a registered source, provided the source does not share ownership in common with the registrant's firm. If the end-use product registrant decides to switch sources, a new Confidential Statement of Formula, EPA Form 8570-4, must be submitted to the appropriate Product Manager within 90 days of receipt of this Guidance Document. The chart on the following page shows what is generally required of those who do and do not qualify for the formulator's exemption in the Registration Standards program.

If you decide to request the Agency to discontinue the registration of any of your products subject to the reregistration requirements of this Guidance Document, please notify the Product Manager named in the cover letter, within 90 days from the receipt of this document, that you wish to voluntarily cancel the registration(s). If you decide to maintain your product registration(s), you must provide the information described in the following pages within the timeframes outlined. EPA will issue a notice of intent to cancel or suspend the registration of any currently registered product if you fail to comply with the requirements set forth in this Guidance Document.

This Guidance Document will be supplemented by EPA with additional information about compliance with data support requirements. In Monsanto v. Administrator, EPA was recently enjoined from implementing in any way the "mandatory data licensing" aspects of §3(c)(1)(D) of FIFRA. EPA is assessing the implications of the injunction for the reregistration process. Because this situation is currently unresolved, EPA has decided to proceed with the requirements in this Guidance Document which do not relate to compliance with the §3(c)(1)(D) provisions and to supplement the Document with additional guidance when circumstances permit. Failure to comply with the provisions of the subsequent guidance will also result in issuance by EPA of an intent to cancel the affected product registration(s).

Registrants are reminded that §6(a)(2) of FIFRA requires you at any time to submit factual information raising concerns of possible unreasonable adverse effects of a pesticide. You should notify the Agency of interim results of studies in progress if those results show possible unreasonable adverse effects.

| PRODUCTS SUBJECT TO THE REGISTRATION STANDARDS PROGRAM | ACTION(S) REQUIRED TO MAINTAIN REGISTRATION |
|---|---|
| I. Products That Do Not Qualify For The Formulator's Exemption | |
| A. Single Active Ingredient Products* | These products must be reregistered. To obtain reregistration, labeling, packaging and data requirements must be satisfied in accordance with the Registration Standards Guidance Document. |
| B. Multiple Active Ingredient Products | These products will not be reregistered at this time. However, generic data required to continue the registration of the active ingredient under review, as described in the Registration Standards Guidance Document, will be required and some labeling precautions may also be required. |
| II. Products That Do Qualify For The Formulator's Exemption | Only when additional restrictions or labeling are needed to protect man or the environment will these products be subject to the Registration Standard requirements. Affected products will be dealt with in a variety of ways, including but not limited to the Label Improvement Program and special intent to cancel notices. |

* End-use products of registrants who also produce a manufacturing-use product will not be required to be reregistered provided that registrant fulfills the requirements specified in the Guidance Document for manufacturing-use product(s). Such end-use products will be subject to the labeling changes required for products in "II" above. If there are no manufacturing-use products registered by any company end-use products will be required to be reregistered.

NOTE: If all registrants in "I" above fail to meet the requirements in I-A and B above, then the registrants in "II" lose their right to qualify for the formulator's exemption and become subject to the requirements in I-A and B.

# I. REGULATORY POSITION AND RATIONALE

## A. Introduction

This guidance document describes the Agency's regulatory position on registered manufacturing-use products (MPs) containing the insecticide, and nematicide carbofuran. The Agency's position is based on an evaluation of all accepted uses and registered products under sections 3 and 24(c) of the FIFRA, with carbofuran as the sole active pesticide ingredient. This document considers known chemical and toxicological properties of this chemical, as well as established tolerances for residues in food and feed commodities. From these considerations the Agency sets forth the data and labeling requirements that must be met by registrants and applicants of carbofuran products in order for the products to be registered or reregistered under this document. The tables accompanying this document list the data requirements which must be satisfied through submission of additional information.

## B. Description of Chemical and Use Profile

Carbofuran - $C_{12}H_{15}NO_3$; mol. wt. 221.3

C.A.S. #1563-66-2, Shaughnessy #090601

Carbofuran is the accepted common name for 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate. Other names include the trade names Furadan, Curaterr, and Yaltox, and the code numbers Bay 78537, D 1221, ENT 27164, FMC 10242, and NIA 10242. Technical carbofuran is a white crystalline solid. It has a melting point of 153-154°C (pure material). Carbofuran is stable under neutral or acidic conditions and is unstable under alkaline conditions.

Carbofuran is a carbamate pesticide which causes cholinesterase inhibition at very low dosage levels. Its chief metabolites are 3-keto-carbofuran, the free or glycosidic conjugate of 3-hydroxy-carbofuran, carbofuran phenol, 3-keto-carbofuran phenol and 3-hydroxycarbofuran phenol. This insecticide, and nematicide is manufactured by FMC Corporation.

The only registered manufacturing-use products of carbofuran are a 75% product (EPA Registration No. 279-2862) and a 85% product (EPA Registration No. 279-3038). These products are referred to by the registrant (FMC Corporation) as the 75% and 85% base and are used to formulate end-use products. These products are manufactured from a true technical product which is not federally registered and should thus be denoted as a formulation intermediate (FI) produced essentially by an integrated formulation process.

Carbofuran is commercially formulated into 2%, 3%, 5%, 9.8%, 10% and 15% granules for soil application, and is formulated as 75% wettable powder and 4 pound/gallon flowable concentrate for use in sprays. Registered uses include application to alfalfa, bananas, barley, clover, coffee, corn (field, pop and sweet), cotton, cranberries, cucumbers, forest trees (cottonwood and pine plantations, southern pine seed orchards) grapes, melons, oats, ornamental trees (cottonwood nursey stock and Siberian elm), peanuts, peppers, plantain, potatoes, pumpkins, rice, sorghum (grain and forage), soybeans, squash, strawberries, sugar beets, sugarcane, sunflowers, tobacco and wheat. In addition there are Special Local Need registrations for use of carbofuran on Bermudagrass (seed crop), clover (ladino), commercially grown ornamentals, garlic, nonbearing fruit trees (apple, apricot, cherry, nectarine, peach and plum), sunflower (seed crop), and white pine seed orchards.

## C. Regulatory Position

Based on the review and evaluation of all available data and other relevant information on carbofuran, the Agency has made the following determinations:

1. All concentrate, suspensions (flowable concentrates), and wettable powders 40% and greater have been classified for restricted use (CFR 40 162.31). Based on high acute toxicity via the oral, dermal and inhalation routes of exposure, the Agency has determined that all other carbofuran products must also bear the "Restricted Use Pesticide" statement on the product label. The "Restricted Use Pesticide" statement must be on the labels of all carbofuran products released for shipment after September 1, 1985, and on all labels of carbofuran products still in channels of trade after September 1, 1986.

2. The Agency is unable to complete a full tolerance reassessment because of certain residue chemistry data gaps. Review of the additional residue data being required under this document may result in a revision of specific tolerances.

3. In the absence of adequate dissipation data, dermal toxicity and exposure data, and inhalation toxicity data, the Agency is imposing an interim 24-hour reentry interval for carbofuran for all uses where longer reentry intervals have not previously been established. A previously established reentry interval prohibits reentry into fields within 14 days of application without wearing proper protective clothing if prolonged intimate contact with corn foliage would result.

4. New and/or amended environmental hazard label statements are being imposed to reflect data and use history of carbofuran's effects to nontarget species.

5. An advisory statement and a geographical use restriction are being imposed for end-use product labeling in an effort to minimize further groundwater contamination.

6. Because of insufficient crop rotation data the Agency is imposing a crop rotation label restriction on end-use product labels.

7. Registrants must provide or agree to develop additional data, as specified in the tables in this guidance document, to maintain existing registration or to obtain new registrations of substantially similar products.

## D. Regulatory Rationale

The Agency has reviewed the available data concerning toxicology, environmental, product and residue chemistry, and ecological effects.

Sufficient data are available to show that carbofuran has a high acute toxicity via the oral, inhalation and dermal routes of exposure and has been assigned to Toxicity Category I. While carbofuran is highly toxic by the oral, dermal and inhalation routes of exposure, neither carbofuran nor its metabolites have been demonstrated to be oncogenic, teratogenic, fetotoxic, or mutagenic in valid data reviewed to date.

However, toxicology data requirements for technical carbofuran are not complete. Because of possible farm worker exposure, when handling products containing carbofuran and working with crops that have been treated, a 21-day dermal study and a 21-day inhalation study must be done. These studies would replace a 21-day inhalation study (IBT# N5183) in the guinea pig and a 20-day percutaneous study (IBT# B3891) in the rabbit. Both of these studies were conducted by Industrial Bio-Test Laboratories and have been invalidated by the Agency. Additionally, a dermal absorption study must be done to characterize the potential for dermal absorption. Without these data the Agency must assume 100% dermal absorption. And lastly, to determine potential inhalation exposure an assessment of the fine respirable particles in shipped granular carbofuran must be performed. A determination of the amount of particulate matter and the percent of active ingredient which is respirable must be done under conditions which simulate the opening and transfer operations of packages containing granular material.

In the absence of adequate dermal toxicity and exposure data the Agency is retaining the previously established 14-day reentry period for corn and sorghum treated with carbofuran because these are the crops where farm workers are likely to experience prolonged high dermal exposure from such treatment.

Several data gaps have been identified in the areas of product chemistry and residue chemistry. These data gaps require the submission of additional information on the manufacturing process, chemical analysis, certification of upper limits of impurities, and residue analyses of various food and feed commodities.

In 1979 to 1981 carbofuran residues were found in drinking water wells located near carbofuran-treated potato fields in

Suffolk County, Long Island, New York at levels near 50 parts per billion (ppb). Carbofuran residues have since been found in drinking water wells in other states including Florida, Maryland and Wisconsin. The Agency's Office of Drinking Water has established a Health Advisory of 5 ppb for residues of carbofuran in drinking water. The Office of Drinking Water is reviewing the data base on carbofuran in order to determine whether a National Primary Drinking Water Regulation should be developed.

While the Agency has some descriptive environmental fate data and ground water monitoring data on carbofuran, this information is not sufficient to fully assess the environmental fate of carbofuran. However, from these data and other information, it has been determined that carbofuran and its metabolites leach in areas of fine to coarse textured soils, including those soils with a high organic matter content. Additional data are required on soil metabolism, soil and aquatic dissipation, leaching and volatility and monitoring of ground water to fully assess the environmental fate and transport of carbofuran and its metabolites.

Based on new labeling and additional use restrictions imposed by this guidance document (e.g., prohibition against use on Long Island, N. Y. and imposition of a groundwater advisory statement), the Agency believes that the potential for further ground water contamination will be reduced. Additional special labeling may be required when additional data that are necessary to complete the assessment of groundwater potential are received and the Agency reassesses its current regulatory position.

Because of the restricted use classification of carbofuran products, certified applicator training will be required before this pesticide can be used.

The available data indicate that carbofuran is highly toxic to wildlife, especially to birds. Data from field studies and the use history of carbofuran provide sufficient information which strongly suggest that application of this pesticide results in mortality, and possibly local population reductions, in certain avian species. Existing data cannot determine whether these effects are excessive, long lasting, or likely to diminish wildlife resources. Additional field studies are required to further quantify the impact on avian populations.

A special review was considered by the Agency because of a potential problem with secondary poisoning of raptors. However, it was determined that the Agency had insufficient data in this area to justify sending the chemical into special review and that more data was needed in order to assess the impact of this potential problem on avian populations. Therefore, in order to obtain the necessary data to assess the problem, this document requires carbofuran registrants to do extensive multi-year monitoring of avian populations, with special emphasis on raptorial birds in areas of heavy use (i.e., the corn belt) and in areas of early planting where high densities of wintering birds utilize treated fields. The decision on whether to proceed with a special review has been withheld pending review of data to be developed in the next two years to quantify actual avian losses.

The Agency is imposing a crop rotation restriction for end-use product labeling because there is insufficient crop rotation data on carbofuran. The Agency reviewed confined accumulation studies, soil accumulation studies, and fish accumulation studies. However, these studies all had inappropriate methodologies. Therefore, until appropriate rotational crop data are submitted and evaluated, the new label restriction must be included on end-use product labeling.

In addition to the above label restrictions, the Agency is also requiring registrants to place extensive environmental hazard statements on carbofuran labels for various formulations and use areas. One of the use areas for which such environmental hazard statements are being required is the use of granular carbofuran products on rice. For this use area registrants are required to include "Fish may be killed at recommended rates" in the environmental hazard statement. Although it is not common practice to grow fish in rice paddies, nevertheless, there are occassions where fish are inadvertenly introduced into the paddies at the time of flooding. When this occurs there is the possibility that treatment of the rice paddy with carbofuran at recommended rates will result in fish being killed. However, because of the rapid breakdown of carbofuran, the Agency feels that there is little likelihood of a fish kill resulting in natural streams from the discharge of water from paddies treated with carbofuran.

The Pesticide Incident Monitoring System (PIMS) reports on carbofuran from 1966 through 1979 (the 1979 report is the latest one available), contained 73 incidents associated with human injury. There was one fatality, which was a verified suicide in the home. Most of the more serious incidents were caused by accidental exposure to carbofuran. The manifestations of the cholinergic poisoning symptoms included nausea, vomiting, cramps, excessive sweating, salivation and blurred vision.

Cattle deaths were also accidental and involved inadvertent mixing with feed, improper disposal of containers and contamination of field water runoff pools. Most reported incidents in man or livestock were not severe and were reversible in hours. All subjects hospitalized responded favorably to atropine sulfate (antidote) and exhibited no recurrent symptoms on subsequent observation.

Most workers in the reported incidents were apparently exposed by dermal exposure except for the mixer/loaders where inhalation may have also contributed to the exposure.

In accordance with the FIFRA, the Agency's policy is not to cancel or to withhold registration for the lack of certain data as provided under FIFRA sections 3(c)(2)(B) and 3(c)(7). Rather, publication of this document provides a mechanism for identifying data needs, and registration under this document allows for upgrading of labels during the period in which the required data are being generated. When the Agency receives these data it will determine whether they affect the carbofuran registration.

## E. Criteria for Products Subject to the Document

This guidance document covers all manufacturing-use and end-use products that contain carbofuran as the sole active pesticide ingredient. Registrants and applicants for registration of such products must comply with all terms and conditions described herein. This includes making a commitment to fill data gaps on a schedule specified by the Agency. Also, registrants and applicants for registration must follow the instructions contained in the document and complete and submit the appropriate forms within the specified timeframe.

## F. Acceptable Ranges and Limits

### 1. Product Composition Standards

To be registered under this document, MPs and EPs must contain carbofuran as the sole active ingredient. Each product formulation proposed for reregistration or registration must be fully described with appropriate certification of limits.

### 2. Acute Toxicity Limits

The Agency will consider for reregistration or registration any MPs and EPs provided the product is supported by appropriate acute toxicity data and the labeling for the product bears appropriate precautionary statements.

## G. Required Labeling

All MPs and EPs containing carbofuran must bear appropriate labeling as specified in 40 CFR 162.10, in addition to the following specific labeling requirements.

### 1. Labeling Requirements for All MPs

#### a. Ingredient Statement

The ingredient statement for MPs must list the active ingredient as: carbofuran.

## b. Use Pattern Statement

All manufacturing use products labels must state that the product is only intended for formulation into end-use products for one or more of the use patterns listed in this document. A limiting factor will be the data that support each use pattern. No use may be included on the label if the registrant fails to agree to comply with the data requirements in either TABLE A or TABLE B for that use pattern.

The attached "EPA Index to Registered Pesticides" entry summarizes all currently acceptable uses for all single active ingredient products containing carbofuran, including sites of application, target pests, dosage rates, restrictions and limitations, and the method and frequency of application.

### Terrestrial Food Uses

Alfalfa, bananas, barley, Bermudagrass (seed crop), clover (ladino), coffee, corn (field, pop, and sweet), cotton, cranberries, cucumber, garlic, grapes, melons, nonbearing fruit trees (apples, apricots, cherries, peaches, plums and nectarines), oats, peanuts, peppers, plantain, potatoes, pumpkins, sorghum (grain and forage), soybeans, squash, strawberries, sugar beets, sugarcane, sunflower, and wheat.

Terrestrial Non-Food

Cottonwood (nursery stock), ornamentals (commercially grown), Siberian elm, and tobacco.

Aquatic Food Crops

Rice

Forestry

Cottonwood plantations, pine plantations, Southern pine seed nurseries, and white pine seed nurseries.

c. Human Precautionary Statements

The following precautions must be included in the "Hazards to Humans" section of the product label:

> "Poisonous if swallowed. May be fatal or harmful as a result of skin or eye contact or by breathing dust. Causes cholinesterase inhibition. Warning symptoms of poisoning include weakness, headache, sweating, nausea, vomiting, diarrhea, tightness in chest, blurred vision, pinpoint eye pupils, abnormal flow of saliva, abdominal cramps, and unconsciousness. Atropine sulfate is antidotal."

> "In case of skin contact, wash skin immediately with soap and water. Remove contaminated clothing and wash before reuse. In case of swallowing, drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person."

d. Environmental Hazard Statements

The following precautions must be included in the "Environmental Hazards" section of the label.

> "This pesticide is toxic to fish, birds and other wildlife. Do not discharge effluent containing this product directly into lakes, streams, ponds, estuaries, oceans or public water unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the Environmental Protection Agency.

2. Labeling Requirements for All End-Use Products

a. The following "Restricted Use Statement" must appear on the product label.

"RESTRICTED USE PESTICIDE"

> "For retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification."

b. Ingredient Statement

The ingredient statement for EPs must list the active ingredient as: carbofuran.

c. Use Directions

In the "Directions for Use" section include the following statements:

Geographical Use Restrictions:

"Do not use this product on Long Island, N. Y."

Rotational Crops:

"Do not plant any crop other than those with registered carbofuran uses in carbofuran-treated soil sooner than 18 months after last application."

Reentry:

"If prolonged intimate contact with corn and/or sorghum foliage will result, do not re-enter treated fields within 14 days of application without wearing proper protective clothing. For all other situations, do not re-enter fields less than 24 hours following application."

For granular formulation include:

"Cover or incorporate granules in spill areas"

d. Precautionary Statements

The following precautions must be included in the "Hazards to Humans and Domestic Animals" section of the product label:

> "Poisonous if swallowed. May be fatal or harmful as a result of skin or eye contact or by breathing dust. Causes cholinesterase inhibition. Warning symptoms of poisoning include weakness, headache, sweating, nausea, vomiting, diarrhea, tightness in chest, blurred vision, pinpoint eye pupils, abnormal flow of saliva, abdominal cramps, and unconsciousness. Atropine sulfate is antidotal."

"In case of skin contact, wash skin immediately with soap and water. Remove contaminated clothing and wash before reuse. In case of swallowing, drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person."

"Wear long-sleeved clothing and protective gloves when handling. Wash hands and face before eating or smoking. Bathe at the end of the work day. Change clothing daily and wash before reuse."

e. Environmental Hazard Statement

The following statements must appear under the heading "Environmental Hazards."

i. "Carbofuran is known to leach through soil, and has been found in groundwater as a result of agricultural use. Users are advised not to apply in areas where soils are permeable, i. e., well drained, and which overlie shallow aquifers, particularly those currently being used for drinking water. Consult with the pesticide state lead agency for information regarding soil permeability and aquifer locations in your area."

ii. Granular products except for use on rice: "This pesticide is toxic to fish, birds and other wildlife. Birds feeding on treated areas may be killed. Birds killed by carbofuran pose a hazard to hawks and other birds-of-prey; bury or otherwise dispose of dead birds to prevent poisoning of other wildlife. Cover or incorporate granules in spill areas. Runoff from treated areas may be hazardous to fish in neighboring areas. Do not apply directly to water. Do not contaminate wells, wetlands or any body of water by cleaning of equipment or disposal of waste."

iii. Granular products used on rice: Same as for the granular products except delete "Do not apply directly to water" and substitute "Fish may be killed at recommended rates."

iv. Non-granular products:

"This pesticide is toxic to fish, birds and other wildlife. Birds feeding on treated areas may be killed. Drift and runoff from treated areas may be hazardous to fish in neighboring areas. Do not apply directly to water. This pesticide is highly toxic to bees exposed to direct treatment or residues on crops. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area."

v. Non-granular products used on potatoes and/or alfalfa:

For waterfowl protection, do not apply immediately before or during irrigation, or on fields in proximity of waterfowl nesting areas, or on fields where waterfowl are known to repeatedly feed.

## H. Tolerance Reassessment

Tolerances have been established for carbofuran and its metabolites on a number of different food and feed crops. A wide array of toxicology studies have been used in support of these tolerances. These data include a 2-year rat feeding/ oncogenicity study with a no-observed effect level (NOEL) of

1.0 milligram (mg)/kilogram (kg) of body weight (bw)/day which was negative for oncogenic effects at the levels tested (0.5-5.0 mg/kg bw/day); a 1-year dog feeding study with NOEL of 0.5 mg/kg bw/day, a 2-year mouse feeding/oncogenicity study with a NOEL of 3.0 mg/kg bw/day which was negative for oncogenic effects at the levels tested (up to 500 ppm in feed); a 3-generation rat reproduction study with a 20 ppm in feed NOEL; a rat teratology study which was negative for teratogenic effects at the highest level tested (HLT) (1.2 mg/kg bw/day); and a rabbit teratology study which was negative for teratogenic effects at 2.0 mg/kg/day (HLT).

Based on the 1-year dog feeding study with a NOEL of 0.5 mg/kg/day for cholinesterase depression and systemic effects and using a safety factor of 100 fold, the Agency calculates the Acceptable Daily Intake (ADI) to be 0.005 mg/kg/day. The maximum permissible intake (MPI) for carbofuran and its cholinesterase-inhibiting metabolites is 0.3 mg/day.

The theoretical maximum residue contribution (TMRC) from the established tolerances (published in 40 CFR 180.254) is 0.3415 mg/day for a 1.5 kg food diet for a 60 kg person. The TMRC is 113.84% of the MPI and exceeds the ADI by 13.84%. Exceeding the MPI does not necessarily indicate adverse effects in man from excessive carbofuran dietary exposure because in reality: (1) 100% of each of the crops for which carbofuran is registered is not treated, and (2) residues in or on treated crops as consumed rarely exist at tolerance levels. Therefore, the TMRC could be recalculated to a smaller and more realistic level considering in the calculation actual percent crop treated and actual residue levels. No more substantial tolerances will be granted until a tolerance reassessment is completed.

The United States tolerances are established for combined residues of carbofuran and its carbamate and phenolic metabolites. Internationally, other countries do not establish tolerances in that manner. Canada's tolerances are expressed as residues of carbofuran and its carbamate derivatives and they are only interim; Mexico's tolerances are expressed as carbofuran per se; and under Codex Alimentarius the MRLs are carbofuran and its cholinesterase inhibiting metabolites. For comparison of United States', Canada's, Mexico's, and Codex Alimentarius' tolerances, see the pages that follow.

U. S. Tolerances

| Crop | Maximum Residue Limits (PPM)<br>Carbamate | Total |
|---|---|---|
| alfalfa forage | 5.0 | 10.0 |
| alfalfa hay | 20.0 | 40.0 |
| bananas | - | 0.1 |
| barley, grain | 0.1 | 0.2 |
| barley, straw | 1.0 | 5.0 |
| cattle, (fat, meat, and meat by-products) | 0.02 | 0.05 |
| coffee beans | - | 0.1 |
| corn, field and popcorn-grain | 0.1 | 0.2 |
| corn, fresh-kernels and cob (husk removed) | 0.2 | 1.0 |
| corn fodder and forage, field, pop-, and sweet | 5.0 | 25.0 |
| cottonseed | 0.2 | 1.0 |
| cranberries | 0.3 | 0.5 |
| cucumbers | 0.2 | 0.4 |
| goats, (fat, meat, and meat by-products) | 0.02 | 0.05 |
| grapes | 0.2 | 0.4 |
| grapes, dried pomace | 1.5 | 2.0 |
| hogs (fat, meat, and meat by-products) | 0.02 | 0.05 |
| horses, (fat, meat, and meat by-products) | 0.02 | 0.05 |
| melons | 0.2 | 0.4 |
| milk | 0.02 | 0.1 |
| oats, grain | 0.1 | 0.2 |
| oats, straw | 1.0 | 5.0 |
| peanuts | 1.5 | 4.0 |
| peanut hulls | 8.0 | 10.0 |
| peanut soapstock | 3.0 | 24.0 |
| peppers | 0.2 | 1.0 |
| potatoes | 1.0 | 2.0 |
| pumpkins | 0.6 | 0.8 |
| raisins | 1.0 | 2.0 |
| raisin waste | 3.0 | 6.0 |
| rice, grain | - | 0.2 |
| rice, straw | 0.2 | 1.0 |
| sheep, (fat, meat, and meat by-products) | 0.02 | 0.05 |
| sorghum, (grain) | - | 0.1 |
| sorghum, (grain), forage & fodder | 0.5 | 3.0 |

U. S. Tolerances (continued)

| Crop | Maximum Residue Limits (PPM) Carbamate | Maximum Residue Limits (PPM) Total |
|---|---|---|
| soybeans | 0.2 | 1.0 |
| soybean, forage and hay | 20.0 | 35.0 |
| soybean, soapstock | 1.0 | 6.0 |
| squash | 0.6 | 0.8 |
| strawberries | 0.2 | 0.5 |
| sugar beets | - | 0.1 |
| sugar beet tops | 1.0 | 2.0 |
| sugarcane | - | 0.1 |
| sunflower | 0.4 | 0.8 |
| sunflower seed hulls and meal | 0.5 | 1.0 |
| sweet potato | 0.6* | 2.0* |
| tobacco | N/A | N/A |
| wheat, grain | 0.1 | 0.2 |
| wheat, straw | 1.0 | 5.0 |

*Proposed
N/A not applicable - nonfood use

## International Tolerances
## Canada

| Crop | | Maximum Residue Limit (PPM) |
|---|---|---|
| | | Tolerance* |
| alfalfa | | 0.1 |
| bananas | | 0.1 |
| barley, grain | | 0.1 |
| coffee beans | | 0.1 |
| corn, grain | | 0.1 |
| cucumbers | | 0.1 |
| grapes | | 0.1 |
| melons | | 0.1 |
| oats, grain | | 0.1 |
| peanuts | | 0.1 |
| peppers | carbofuran + 3-hydroxycarbofuran | 0.5 |
| | phenolic metabolites | 0.5 |
| potatoes | carbofuran + 3-hydroxycarbofuran | 0.5 |
| | phenolic metabolites | 1.0 |
| rice, grain | | 0.1 |
| squash | | 0.1 |
| strawberries | carbofuran + 3-hydroxycarbofuran | 0.4 |
| | phenolic metabolites | 0.5 |
| sugar beets | carbofuran | 0.1 |
| wheat, grain | | 0.1 |

* Except for peppers, potatoes, strawberries and sugar beets residues include carbofuran and its carbamate derivatives.

International Tolerances
Mexico

| Crop | Maximum Residue Limit (PPM)<br>Tolerance** |
|---|---|
| alfalfa forage | 10.1 |
| coffee beans | 0.1 |
| corn, grain | 0.2 |
| corn, forage & fodder | 25.0 |
| cucumbers | 0.4 |
| grapes | 0.5 |
| melons | 0.6 |
| peanut nutmeats | 0.2 |
| peanut hulls | 0.2 |
| peppers (chilli) | 1.0 |
| potato | 2.0 |
| rice, grain | 0.2 |
| rice, straw | 1.0 |
| sorghum (grain), | 0.1 |
| sorghum (grain), forage & fodder | 3.0 |
| soybean | 1.0 |
| soybean, forage | 35.0 |
| squash | 0.8 |
| strawberries | 0.5 |
| sugarcane | 0.1 |

** Mexico's tolerances are established for residue of carbofuran *per se*.

| International Tolerances Codex Alimentarius | Maximum Residue Limit (PPM) |
|---|---|
| Crop | MRL*** |
| alfalfa forage | 5.0 |
| alfalfa hay | 20.0 |
| bananas | 0.1 |
| barley, grain | 0.1 |
| cattle (meat, meat by-products (or edible offal) and fat) | 0.05 ### |
| coffee beans | 0.1 |
| cottonseed | 0.1 |
| goats (meat, meat by-products (or edible offal) and fat) | 0.05 ### |
| hogs (meat, meat by-products (or edible offal) and fat) | 0.05 ### |
| horses (meat, meat by-products (or edible offal) and fat) | 0.05 ### |
| maize, grain | 0.1 |
| maize, fodder (fresh) | 5.0 |
| oats, grain | 0.1 |
| peanut kernels | 0.1 |
| potatoes | 0.5 |
| rice, grain | 0.2 |
| sheep (meat, meat by-products (or edible offal) and fat) | 0.05 ### |
| sorghum, grain | 0.1 |
| soybean | 0.2 |
| strawberries | 0.1 |
| sugar beets | 0.1 |
| sugar beet tops | 0.1 |
| sugarcane | 0.1 |
| sweet corn | 0.1 |
| wheat, grain | 0.1 |

*** Maximum residue limit includes carbofuran and its cholinesterase-inhibiting metabolites.

### Combined residues of carbofuran and 3-hydroxycarbofuran (expressed as carbofuran).

## CARBOFURAN*

**TYPE PESTICIDE:** Insecticide (also refer to Nematicide entry)

**FORMULATIONS:**
FI (75%, 85%)
G (2%, 3%, 5%, 9.8%, 10%, 15%)
WP (75%)
FlC (4 lb/gal)

**GENERAL WARNINGS AND LIMITATIONS:** RESTRICTED USE PESTICIDES. Do not use carbofuran on Long Island, NY. Wear long-sleeved clothing and protective gloves when handling.

**Bee Caution** (Non-granular formulations only):
Carbofuran is highly toxic to bees exposed to direct treatment or residues on crops. Do not apply carbofuran or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

**Enviornmental Hazards:**
Carbofuran is known to leach through soil and has been found in groundwater as a result of agricultural use. Users are advised not to apply in areas where soils are permeable, that is, well drained, and which overlie shallow aquifers, particularily those currently being used for drinking water. Consult with the state lead pesticide agency for information regarding soil permeability and aquifer locations in your area.
Carbofuran is toxic to fish, birds and other wildlife. Birds feeding on treated areas may be killed. Cover or incorporate granules in spill areas. Drift and runoff from treated areas may be hazardous to fish in neighboring areas. Do not apply directly to water or wetlands.

**Agricultural Crop Tolerances:**
0.1 ppm - coffee beans
0.4 ppm - cucumbers (of which not more than 0.2 ppm is carbamates)
0.4 ppm - melons (of which not more than 0.2 ppm is carbamates)
0.8 ppm - pumpkins (of which not more than 0.6 ppm is carbamates)
0.8 ppm - squash (of which not more than 0.6 ppm is carbamates)

**Livestock and Poultry Tolerances:**
0.1 ppm in milk (of which not more than 0.02 ppm is carbamates)
0.05 ppm in the fat, meat, and meat byproducts of cattle, goats, hogs, sheep (of which not more than 0.02 ppm is carbamates)

**Definition of Terms:**
Claims for pest control limited to suppression of populations are indicated by parenthesized pest name.

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*2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate
**covers single active ingredient labeling only.

## GENERAL WARNINGS AND LIMITATIONS (continued)

The use of carbofuran may pose a hazard to the following Federally designated endangered/threatened species known to be found in certain areas within named locations.

Attwater's Greater Prairie Chicken - TX counties including Aransas, Austin, Brazoria, Colorado, Galveston, Goliad, Harris, Refugio, and Victoria

Aleutian Canada Goose - CA counties including Colusa, Merced, Stanislaus, and Sutter

Kern Primrose Sphinx Moth - Walker Basin of Kern County, CA

Carbofuran may not be used in areas where adverse impact on the Federally designated endangered/threatened species noted above is likely. Prior to making applications, the user of carbofuran must determine that no such species are located in or immediately adjacent to the area to be treated. If the user is in doubt whether or not the above endangered species may be affected, he should contact either the regional U.S. Fish and Wildlife Service Office (Endangered Species Specialist) or personnel of the State Fish and Game Office.

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|

## AGRICULTURAL CROPS

General Warnings and Limitations: Do not plant any crop other than those with registered carbofuran uses in carbofuran-treated soil sooner than 18 months after last application. Do not re-enter treated fields within 24 hours following application.

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| 23001AA | Alfalfa | | 10 ppm alfalfa (fresh) (of which not more than 5 ppm are carbamates)<br>40 ppm alfalfa hay (of which not more than 20 ppm are carbamates)<br>7 day preharvest interval through 0.25 pound per acre for foliar application.<br>14 day preharvest interval through 0.5 pound per acre for foliar application.<br>28 day preharvest interval through 1 pound per acre for foliar application.<br>Do not make more than 2 applications per growing season. Do not exeed 0.5 pound per acre on second application.<br>Apply to pure stands of alfalfa. Do not move bees to alfalfa fields within 7 days of application. Apply |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | Alfalfa (continued) | | |
| | | | wettable powder formulation in a minimum of 5 gallons of water and flowable concentrate formulation in a minimum of 2 gallons of water per acre by aircraft. Unless otherwise specified apply in a minimum of 10 gallons of water per acre by ground equipment. For waterfowl protection, do not apply on fields in proximity of waterfowl resting areas and/or fields where waterfowl are known to repeatedly feed. |
| IOABANA | Alfalfa blotch leaf-miner | 0.5-1 lb/A (4 lb/gal FlC) | Use limited to Northeastern states. Foliar application. Apply when pest first appears. |
| INASBWC | Alfalfa weevil (larvae) | 0.25-1 lb/A (75% WP) (4 lb/gal FlC) | Foliar application. Apply after first larval feeding is observed. |
| INASBWJ | Alfalfa weevil (adults) | 0.5-1 lb/A (4 lb/gal FlC) | Foliar application. Apply when pest first appears. |
| IRAFAJA | Potato leafhopper | | |
| IRACFGH | Blue alfalfa aphid (nymphs) | 0.25-0.5 lb/A (4 lb/gal FlC) | Use limited to AZ and CA. Foliar application. Apply in a minimum of 30 gallons of water per acre by ground equipment. Apply when feeding is noticed or when pest appears. |
| IRACFGJ | Blue alfalfa aphid (wingless adults) | | |
| INASBTC | Egyptian alfalfa weevil (larvae) | 0.25-1 lb/A (4 lb/gal FlC) | Foliar application. Apply when feeding is noticed or when pest appears. For snout beetles in NY. |
| IRACAIA | Pea aphid | | |
| INASAAA | Snout beetles | | |
| IVABAAA | Grasshoppers | 0.125-0.25 lb/A (4 lb/gal FlC) | Foliar appliction. Apply when feeding is noticed. |
| IQAMARA | Lygus bugs | 1 lb/A (4 lb/gal FlC) | Foliar application prior to bloom. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /06002AA<br>/06016AA | Banana<br>Plantain | | 0.1 ppm bananas<br>Soil application through 2.5 grams per unit of production. |
| INASAWA | Banana root borer | 1.25-1.5 g/unit of production (5% G) | Soil application at planting. Apply 0.8 to 1 gram to the planting hole and 0.45 to 0.5 gram to the soil surface after the hole is covered. |
| | | 2 g/unit of production (5% G) | Retreat soil surface with 2 grams, 4 months and 8 months after planting. |
| | | 2-2.5 g/unit of production (5% G) | Soil application to established plantings. Apply 0.4 to 0.5 gram around the base of the mother, daughter, and granddaughter plants. Apply the remaining 1.6 to 2 grams over an area of 50 centimeters around the producing unit (mother, daughter, and granddaughter plants). Make 2 applications per year. |
| /24001AA<br>/24003AA<br>/24007AA | Barley<br>Oats<br>Wheat | | 0.2 grain (of which not more than 0.1 ppm is carbamates)<br>5 ppm straw (of which not more than 1 ppm is carbamates)<br>Foliar application before heads emerge from boot through 0.25 pound per acre. Do not make more than 2 applications per season. Do not feed treated forage to livestock. For waterfowl protection, do not apply on fields in proximity of waterfowl nesting areas and/or on fields where waterfowl are known to repeatedly feed. |
| INAMCMA | Cereal leaf beetle | 0.25 lb/A (4 lb/gal FlC) | Foliar application. Apply in a minimum of 2 gallons of water per acre by aircraft and a minimum of 10 gallons of water per acre by ground equipment. Apply when pests appear. Apply before heads emerge from boot. |
| INAVBAA | Grasshoppers | 0.125-0.25 lb/A (4 lb/gal FlC) | |

## CARBOFURAN

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /22017BA | Bermudagrass (seed crop) | | |
| /23003AA | Clover (ladino) | | |
| /14007AA | Garlic | | This use occurs only on Special Local Need (24(C)) labeling and has not been included in this entry. Refer to appropriate labeling for use information and limitations. |
| | Clover (ladino) | See Bermudagrass (seed crop) cluster. | |
| /28006AA | Corn, Field | | 0.2 ppm corn grain (of which not more than 0.1 ppm is carbamates)<br>25 ppm forage and fodder (of which not more than 5 ppm is carbamates)<br>No preharvest interval through 1 pound per acre for foliar application.<br>Banded soil application (at time of planting) through 1.2 ounces per 1,000 feet of row. Do not make a foliar application if more than 1.2 ounces per 1,000 feet of row have been applied at planting. Do not make more than 2 foliar applications per season.<br>If prolonged intimate contact with corn foliage will result, do not re-enter treated fields within 14 days without proper protective clothing. |
| ITBMCCA<br>ITBMBYA | European corn borer<br>Southwestern corn borer (second and third generation) | 1 lb/A (10-15% G) | Foliar application. Apply with aircraft over the corn plants or with ground equipment by directing the granules into the whorl. Apply when eggs begin to hatch. |
| INAMBLA<br>INAMBMA<br>INAMBOA | Northern corn rootworm<br>Southern corn rootworm<br>Western corn rootworm | 1.2 oz/ 1,000 ft row (4 lb/gal FlC) | Soil application at planting (band). Apply a 7 inch band over the row or inject on each side of the corn row by mixing with water or liquid fertilizer. |

Refer to Corn, Pop for additional information.

## CARBOFURAN

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /15004AA<br>/28006AA | Corn, Pop | | 0.2 ppm corn grain including popcorn (of which not more than 0.1 ppm is carbamates)<br>25 ppm forage and fodder (of which not more than 5 ppm is carbamates)<br>Banded soil application (at time of planting) through 3.6 ounces per 1,000 feet of row.<br>Banded soil application (postemergent) through 1.2 ounces per 1,000 feet of row.<br>If prolonged intimate contact with corn foliage will result, do not re-enter treated fields within 14 days without proper protective clothing. |
| ITBCCFA | Armyworm | 1.2 oz/ 1,000 ft row (10-15% G) | Soil application at planting.(band). For conventional, minimum, and no tillage fields. Apply a 7 inch band ahead of the planter press wheel and incorporate into the top 1 inch of soil, or direct the granules into the planter shoe with the seed, or place the applicator tube directly behind the planter shoe so that the granules drop into the furrow and mix with the covering soil. Labeling claims control of armyworms for up to 4 to 6 weeks after planting. For early season suppression of the common stalk borer. For southwestern corn borer, apply to the seed furrow. Southern corn billbug for use in the Southeastern states, applied to the seed furrow. To suppress leafhoppers, and thereby reduce losses due to maize chloratic dwarf virus and corn smut, apply to the seed furrow. |
| ITBMCCA | (European corn borer (first generation)) | | |
| INAMADA | Flea beetles | | |
| INAMBLA | Northern corn rootworm | | |
| INAMBMA | Southern corn rootworm | | |
| INAMBOA | Western corn rootworm | | |
| ITBCBZA | (Common stalk borer) | 2.4-3.6 oz/ 1,000 ft row (10-15% G) | |
| ITBMCCA | European corn borer (first generation) | | |
| IRAFAAA | (Leafhoppers) | | |
| INASDWA | Southern corn billbug | | |
| INAVAAA | Wireworms | | |
| ITBMAYA | Southwestern corn borer (second and third generation) | 1.8-3.6 oz/ 1,000 ft row (10-15% G) | |
| INAMBLA | Northern corn rootworm | 1.2 oz/ 1,000 ft row (10-15% G) | Postemergent soil application (band). Apply by banding over the row or by sidedressing both sides of the row and cultivate into the soil. |
| INAMBOA | Western corn rootworm | | |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /15005AA | Corn, Sweet | | 1 ppm fresh corn, including sweet corn (kernels plus cob with husk removed) (of which not more than 0.2 ppm is carbamates)<br>25 ppm forage and fodder (of which not more than 5 ppm is carbamates)<br>7 day preharvest and 21 day pregrazing intervals through 0.5 pound per acre for foliar application.<br>Do not make more than 4 applications.<br>If prolonged intimate contact with corn foliage will result, do not re-enter treated fields within 14 days without proper protective clothing. |
| ITBMCCA | European corn borer | 0.5 lb/A (4 lb/gal F1C) | Use limited to IA, IL, MN, NY, VA, and WI.<br>Foliar application to machine harvested sweet corn. Apply in a minimum of 10 gallons of water per acre by ground equipment. Apply just prior to first silking and repeat at 7 day intervals. For second generation European corn borer. |
| /28007AA | Cotton | | 1 ppm cottonseed (of which not more than 0.2 ppm is carbamates)<br>Banded soil application (at planting time) through 1.2 ounces per 1,000 feet of row.<br>Do not graze treated areas or feed treated forage to livestock. |
| IMOAAAA | Thrips | 1.2 oz/ 1,000 ft row (10% G) | Soil application at planting (band). Apply in the seed furrow. |
| /01010AA | Cranberry | | 0.5 ppm (of which not more than 0.03 ppm is carbamates)<br>This is a new use established subsequent to the development of this entry. Refer to appropriate labeling for use information and limitations. |
| | Garlic | See Bermudagrass (seed crop) cluster. | |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /01014AA | Grapes | | N.F.<br>Postharvest application through 10 pounds per acre.<br>Do not use on soil of pH 8 or greater. |
| IRAVAJA | Grape phylloxera | 10 lb/A<br>(10% G) | Use limited to CA.<br>Postharvest soil application. Broadcast over the soil surface between the vine rows and immediately incorporate. Apply after harvest but before February. Remove dense weed growth prior to treatment. Repeat biannually or when buildup of phylloxera on roots causes a loss in vine productivity. Dosage for light to moderate infestations. |
| | Oats | See Barley cluster. | |
| /28015AA | Peanuts | | 4 ppm peanuts (of which not more than 1.5 ppm is carbamates)<br>10 ppm peanut hulls (of which not more than 8 ppm is carbamates)<br>24 ppm fatty acids of peanut soapstock (of which not more than 3 ppm is carbamates, reflecting residues of 8 ppm phenolic metabolite and 1 ppm in alkaline soapstock)<br>Banded soil application (preplant) through 5.6 ounces per 1,000 feet of row; (at planting through 1.1 ounces per 1,000 feet of row; (at pegging) through 2.2 ounces per 1,000 feet of row.<br>Do not feed treated peanut forage to dairy animals or animals being finished for slaughter. |
| IRAFAJA<br>INAMBMA | Potato leafhopper<br>(Southern corn rootworm) | 0.53-1.1 oz/ 1,000 ft row<br>(10-15% G) | Use limited to Southeastern states.<br>Soil application at planting (band).<br>Apply in furrow. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | **Peanuts** (continued) | | |
| IRAFAJA<br>INAMBMA<br>IMOAAAA | (Potato leafhopper)<br>(Southern corn rootworm)<br>Thrips | 2.13-4.4 oz/ 1,000 ft row [12 in. band]<br>or<br>3.2-5.6 oz/ 1,000 ft row [18 in. band]<br>(10-15% G) | Use limited to Southeastern states. Preplant soil application (band). Apply in a band over the row prior to planting and incorporate 3 inches into the soil. Additional control measures may be needed in late season for potato leafhopper. |
| INAMBMA | Southern corn rootworm | 1.1-2.2 oz/ 1,000 ft row<br>(10% G) | Soil application at pegging (band). Apply a 14 to 18 inch band over the row when pegs begin to form or up to 30 days after pegging begins (approximately 60 to 90 days after planting). Incorporate granules immediately if vine growth permits. Do not apply at pegging if carbofuran was applied at planting. |
| /28017AA | **Peppers** | | 1 ppm (of which not more than 0.2 ppm is carbamates)<br>21 day preharvest interval through 3.2 ounces per 1,000 feet of row. |
| ITBMCCA | European corn borer | 2 lb/A<br>or<br>2.4 oz/ 1,000 ft row [38 in. row spacing]<br>(10-15% G) | Soil application (band). Make first application 2 to 4 weeks after transplanting. Sidedress on either one or both sides of the row. |
| | | 3 lb/A<br>or<br>3.2 oz/ 1,000 ft row [38 in. row spacing]<br>(10-15% G) | Soil application (band). Make second application 4 to 6 weeks following the first application. Sidedress on either one or both sides of the row. |

## CARBOFURAN

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | Peppers (continued) | | |
| IRACCUA | Green peach aphid | 2 lb/A<br>or<br>2.4 oz/ 1,000 ft row [38 in. row spacing]<br>(10-15% G) | Use limited to Delmarva Peninsula and South NJ.<br>Soil application (band). Make first application 2 to 4 weeks after transplanting. Sidedress on either one or both sides of the row. |
| | | 3 lb/A<br>or<br>3.2 oz/ 1,000 ft row [38 in. row spacing]<br>(10-15% G) | Use limited to Delmarva Peninsula and South NJ.<br>Soil application (band). Make second application 4 to 6 weeks following the first application. Sidedress on either one or both sides of the row. |
| | Plantain | See Banana cluster. | |
| /14012AA | Potato | | 2 ppm (of which not more than 1 ppm is carbamates)<br>14 day preharvest interval through 1 pound per acre for foliar application.<br>Do not make more than 8 foliar applications per season.<br>Do not apply more than 3 pounds to foliage that has been treated with carbofuran at planting. |
| INAMCFA<br>ITBMCCA<br>INAMBSA<br>IRAFAJA<br>INAMBWA<br>INAVAAA | Colorado potato beetle<br>European corn borer<br>Potato flea beetle<br>Potato leafhopper<br>Tuber flea beetle<br>(Wireworms) | 0.225 lb/ 1,000 ft row<br>(10-15% G) | Soil application at planting (band). Apply directly into the bottom of the furrow during the planting operation. |
| INAMCFA<br>ITBMCCA<br>INAMBSA<br>IRAFAJA | Colorado potato beetle<br>European corn borer<br>Potato flea beetle<br>Potato leafhopper | 0.5-1 lb/A<br>(4 lb/gal FlC) | Foliar application. Apply in sufficient water for thorough coverage by ground equipment. Apply when pest first appears and repeat as needed. For waterfowl protection, do not apply immediately before or during irrigation, or on fields in proximity of waterfowl nesting areas, or on fields where waterfowl are known to repeatedly feed. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | **Potato** (continued) | | |
| IRACCUA | Green peach aphid | 0.225 lb/ 1,000 ft row (10-15% G) | Use limited to Western and Northeastern states including the Delmarva Peninsula.<br>Soil application at planting (band). Apply directly into the bottom of the furrow during the planting operation. |
| INAMAPA | Potato tuberworm | 0.225 lb/ 1,000 ft row (10-15% G) | Use limited to VA.<br>Soil application at planting (band). Apply directly into the bottom of the furrow during the planting operation. |
| | | 0.5-1 lb/A (4 lb/gal FlC) | Use limited to VA.<br>Foliar application. Apply in sufficient water for thorough coverage by ground equipment. Apply when pest first appears and repeat as needed. For waterfowl protection, do not apply immediately before or during irrigation, or on fields in proximity of waterfowl nesting areas, or on fields where waterfowl are known to repeatedly feed. |
| /28072AA | **Rice** | | 0.2 ppm rice (of which not more than 0.1 ppm is carbamates)<br>1 ppm rice straw (of which not more than 0.2 ppm is carbamates)<br>Broadcast soil application (preplant) through 0.5 pound per acre.<br>Broadcast water application (post plant) through 0.6 pound per acre.<br>Do not make more than 1 application per season.<br>May be applied by aircraft. Subsequent use of propanil may result in crop injury.<br>Fish may be killed at listed application rates. |
| IOAMARC<br>INASCBA | Dark ricefield mosquito (larvae)<br>Rice water weevil | 0.45-0.6 lb/A (3-5% G) | Use limited to AR, LA, MS, and TX.<br>Broadcast water application. Apply 1 day or within 21 days after permanent flooding. For dark ricefield mosquito larvae apply 2 to 4 days after the field has been flooded. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | **Rice** | | |
| INASCBA | Rice water weevil | 0.5 lb/A (2-5% G) | Use limited to CA.<br>Preplant broadcast soil application. Apply prior to flooding. |
| /22004AA<br>/24006AA | **Sorghum, Forage**<br>**Sorghum, Grain** | | 0.1 ppm grain<br>3 ppm fodder and forage (of which not more than 0.5 ppm is carbamates)<br>75 day preharvest or pregrazing interval (for forage) through 1.2 ounces per 1,000 feet or row for banded soil application (at planting). |
| IQALAEA | Chinch bug | 1.2 oz/ 1,000 ft row (10-15% G) | Soil application at planting (band in furrow). Apply directly into seed furrow. |
| IRACDNA | Greenbug | 0.9-1.2 oz/ 1,000 ft row (10-15% G) | |
| IQALAEA<br>IRACDNA | Chinch bug<br>Greenbug | 1.2 oz/ 1,000 ft row (10-15% G) | Soil application at planting (band). Apply a 7 inch band over the row and incorporate into the top 1 inch of soil by press wheel or by dragging a short length of chain. |
| /28023AA | **Soybeans** | | 1 ppm soybeans (of which not more than 0.2 ppm is carbamates)<br>35 ppm forage and hay (of which not more than 20 ppm is carbamates)<br>Banded soil application (at time of planting) through 2.4 ounces per 1,000 feet of row. |
| INAPAFC | Mexican bean beetle (larvae) | 2.4 oz/ 1,000 ft row (10% G) | Soil application at planting (band). Apply in a 10 to 16 inch band and incorporate into the top 3 inches of soil. |
| | | 1.3-2.4 oz/ 1,000 ft row (10% G) | Soil application at planting (band in furrow). Direct the granules into the planter shoe with the seed or placing the applicator tube behind the planter shoe so that the granules drop into the furrow and mix with the covering soil. |

## CARBOFURAN

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /01016AA | Strawberry | | 0.5 ppm (of which not more than 0.2 ppm is carbamates)<br>Postharvest application through 2.55 ounces per 1,000 feet of row.<br>Do not make more than 1 application per season.<br>Do not apply if berries are present. |
| INASABA | Root weevils | 1.3-2.55 oz/ 1,000 ft row (4 lb/gal FlC) | Use limited to OR and WA.<br>Postharvest soil application (band).<br>Apply 10 to 12 inch band over the row after harvest but before October 1. |
| /28020AA | Sugar Beets | | 0.1 ppm sugar beets<br>2 ppm sugar beet tops (of which not more than 1 ppm is carbamates)<br>Banded soil application (at time of planting) through 1.35 ounces per 1,000 feet of row. |
| IOAXACA | Sugarbeet root maggot | 1.35 oz/ 1,000 ft row (10-15% G) | Soil application at planting (band). Apply 6 to 7 inch band. Incorporate into top 1 inch of soil. |
| /25003AA | Sugarcane | | 0.1 ppm<br>17 day preharvest interval through 1.5 pounds per acre for foliar application. |
| ITBMBAA | Sugarcane borer | 1-1.5 lb/A (5% G)<br>or<br>0.5-0.75 lb/A (4 lb/gal FlC) | Use limited to areas other than HI.<br>Foliar application. May be applied by aircraft. Apply after visible joints form and a minimum of 5 percent of the plants are infested with young larvae feeding in or under the leaf sheath and which have not bored into the stalks. Repeat when field checks indicate infestation exceeding 5 percent. Check sugarcane fields weekly beginning in early June and continue through August. |
| INAVAAA | Wireworms | 0.25-0.5 lb/ 1,000 ft row (10-15% G) | Use limited to areas other than HI.<br>Soil application to plant cane (band). Apply 15 inch band directly over the planted cane and cover with soil. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | Sugarcane (continued) | | |
| | | 0.25-0.5 lb/ 1,000 ft row (15% G) | Use limited to FL.<br>Soil application to stubble cane (band). Apply a 15 inch band over stubble row. Use anytime after harvest until regrowth reaches 18 inches. Cover with 1 to 2 inches of soil. Covering with more than 2 inches of soil may reduce stand. |
| /28021AA | Sunflower | | 0.08 ppm (sunflower seed)(of which not more than 0.04 ppm is carbamates)<br>This is a new use established subsequent to the development of this entry. Refer to appropriate labeling for use information and limitations. |
| /28021BA | Sunflower (seed crop) | | 0.08 ppm (sunflower seed)(of which not more than 0.04 ppm is carbamates)<br>This use occurs only on Special Local Need (24(C)) labeling and has not been included in this entry. Refer to appropriate labeling for use information and limitations. |
| /26005AA | Tobacco, Air Cured, Burley | | N.F. |
| INAMADA | Flea beetles | 3-4 lb/A (10-15% G) or 4 lb/A (4 lb/gal FlC) | Preplant broadcast soil application. Apply to soil surface prior to transplanting and incorporate into the top 3 inches of soil. |
| /26006AA | Tobacco, Flue Cured | | N.F.<br>Carbofuran may induce flecking of bottom or lower leaves. |
| IZZZADA<br>ITBRAAA<br>INAVAAA | (Budworms)<br>Hornworms<br>Wireworms | 6 lb/A (10-15% G) | Preplant broadcast soil application. Apply before forming beds and incorporate into 4 to 6 inches of soil. For hornworms labeling claims lower dosage will control for approximately 60 days. |
| INAMADA<br>ITBRAAA | Flea beetles<br>Hornworms | 4 lb/A (10-15% G) | |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | Tobacco, Flue Cured (continued) | | |
| IZZZADA<br>INAVAAA | (Budworms)<br>Wireworms | 6 lb/A (4 lb/gal FlC) | Preplant broadcast soil application. Apply before forming beds and incorporate into 3 inches of soil. |
| INAMADA | Flea beetles | 4 lb/A (4 lb/gal FlC) | |
| | Wheat | See Barley cluster. | |
| | ORNAMENTALS | | |
| | (Ornamental Plants (herbaceous, woody shrubs, trees and vines)) | | |
| /351330A | Cottonwood (nursery stock) | | |
| ITBQAAA<br>INAMAZA<br>ITBGAUA | Clearwing borer<br>Cottonwood leaf beetle<br>Cottonwood twig borer | 0.3 lb/ 1,000 ft row (10-15% G) | Post plant soil application to nursery stock (band). Apply during May or June to the root zone of the cutting, sidedressing 10 to 12 inches from the trees in a continuous band on both sides of the trees. |
| /32000AA<br>/30135AA | Ornamentals (Commercially Grown)<br>White Pine Seed Orchards | | This use occurs only on Special Local Need (24(C)) labeling and has not been included in this entry. Refer to appropriate labeling for use information and limitations. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| /35115AA | **Siberian Elm** | | Measure tree circumference 3 to 4 feet above the ground. |
| INAMDDA | Elm leaf beetle | 0.05 oz/in. of tree circumference (10-15% G) or 1 unit dose/in. of tree circumference (9.8% G) | Use limited to AZ, CO, KS, NE, NM, UT, and WV.<br>Soil application. Apply before insects appear in the spring. Dig 1 hole per inch of tree girth, 3 to 9 inches deep under the drip line of the tree. (For 9.8 percent granular use applicator provided.) Thoroughly soak area under the tree. Place granules required in each hole. Replace soil plug immediately and compress soil. Keep treated area soaked with water for 14 days. The 10 and 15 percent formulas are intended for commercial applicators. |
| | **White Pine Seed Orchards** | See Ornamentals (Commercially Grown) (cluster). | |
| | **FOREST, CHAPARRAL, NONAGRICULTURAL, AND WASTELANDS** | | |
| /30037DA | **Cottonwood Plantations** | | |
| ITBQAAA<br>INAMAZA<br>ITBGAUA | Clearwing borer<br>Cottonwood leaf beetle<br>Cottonwood twig borer | 4.3-8.8 oz/1,000 ft row (10-15% G) | Post plant soil application to commercial plantations (subsoil band). Apply during June or July. Apply to the root zone of the cutting with a granular subsoil applicator as a sidedress 10 to 12 inches from the trees in a continuous band on both sides of the trees. |
| /30059DA | **Pine Plantations** | | |
| INASBRA<br>INASCVA | Pales weevil<br>Pitch-eating weevil | 1% clay slurry [0.8 oz/150-200 seedlings] (4 lb/gal FlC) | Root dip to pine seedlings prior to transplanting. Thoroughly cover roots or seedlings and keep roots moist until transplanting. Mix 0.8 ounce in 0.5 gallon of water with 2 pounds pulverized kaolin clay (pH 4.5). Adequate ventilation is required for indoor treatment. |

| | Site and Pest | Dosages and Formulation(s) | Tolerance, Use, Limitations |
|---|---|---|---|
| | Pine Plantations (continued) | | |
| | | 1 g/seedling (10% G) | Soil application at transplanting. Apply within a 6 inch radius around each seedling. Cover granules with soil. Do not apply if seedlings were treated with clay slurry root dip. |
| /30075BA | Southern Pine Seed Orchards | | |
| | | | Do not graze or feed orchard plants or plant parts. |
| IZZZDIA<br>ITAAADA<br>IQALASA | Coneborers<br>Coneworms<br>Seedbugs | 0.4-0.8 oz/ in. of tree diameter (10-15% G) | Broadcast soil application to the drip area. Incorporate into the soil. Make 1 application in winter or early spring. |
| INBQCKA | Pine cone beetles | 0.8 oz/in. of tree diameter (10-15% G) | |
| | AERIAL, MOTHPROOFING AND TANK MIX APPLICATIONS | | |
| 9001500<br>AAAAAAA | Aerial Application | | |
| | — | Refer to AGRICULTURAL CROPS<br>Alfalfa, Rice | |

## CARBOFURAN

### Listing of Registered Pesticide Products by Formulation

75% formulation intermediate
  carbofuran (090601)
    000279-02862

85% formulation intermediate
  carbofuran (090601)
    000279-03038

2% granular
  carbofuran (090601)
    000279-02791

3% granular
  carbofuran (090601)
    000279-02792

5% granular
  carbofuran (090601)
    000279-02874 000279-02922

9.8% granular
  carbofuran (090601)
    015056-00001

10% granular
  carbofuran (090601)
    000279-02712

15% granular
  carbofuran (090601)
    000279-03023

75% wettable powder
  carbofuran (090601)
    000279-02875

4 lb/gal flowable concentrate
  carbofuran (090601)
    000279-02876

## CARBOFURAN

Listing of Registered Pesticide Products by Formulation (continued)

9999999 State Label Registrations

CA Reg. No.
000279-04018 010965-09895

LA Reg. No.
006735-04750 006735-04845 006735-04846

NC Reg. No.
000279-03215

NM Reg. No.
000279-03217

NY Reg. No.
038655-10428

SC Reg. No.
000279-03251

TX Reg. No.
000279-03889 000279-04021 006735-04815 006735-04819
006735-04826 006735-04847 006735-04848

## II. REQUIREMENT FOR SUBMISSION OF GENERIC DATA

A. This portion of the guidance document is a Notice issued under the authority of FIFRA Section 3(c)(2)(B) and describes, in table format, the data required for maintaining the registrability of each product. Additionally, a bibliography (Appendix II-1) is included that identifies that data considered as part of the data base supporting this standard. EPA has determined that additional generic data described in this Notice must be submitted to EPA for evaluation in order to maintain in effect the registration(s) of your product(s) identified as an attachment to the cover letter accompanying this guidance document. As required by FIFRA Section 3(c)(2)(B), you are required to take appropriate steps to comply with this Notice.

EPA may suspend the registration of each of those products unless, within the specified time, you have informed EPA how you will satisfy the requirements of this Notice. Any such suspension will remain in effect until you have complied with the terms of this Notice.

B. What Generic Data 1/ Must Be Submitted. You may ascertain which generic data you must submit by consulting Table A at the end of this chapter. That table shows all the generic data needed to evaluate the continued registrability of all products, and the dates by which the data must be submitted. The required data must be submitted and any necessary studies must be conducted in accordance with EPA-approved protocols, the Pesticide Registration Guidelines 2/, or data collected under the approved protocols of the Organization for Economic Cooperation and Development (OECD). If you wish not to develop data which are necessary to support the registration or reregistration of certain uses appearing in your labeling, you may delete those uses at the time you submit your revised labeling.

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1/ Generic data pertain to the properties or effects of a particular ingredient, and thus are relevant to an evaluation of the risks of all products containing that ingredient (or all such products having a certain use pattern), regardless of any such product's unique composition or use. Product-specific data relate only to the properties or effects of a product with a particular composition (or a group of products with closely similar composition).

2/ The Pesticide Registration Guidelines were reproposed on November 24, 1982 in 47 Federal Register 53192.

Also for certain kinds of testing (generally ecological effects), EPA requires the test substance to be a "typical formulation," and in those cases EPA needs data of that type for each major formulation category (e.g., emulsifiable concentrates, wettable powders, granulars, etc.) These are classified as generic data and when needed are specified in Table A. EPA may possess data on certain "typical formulations" but not others. Note: The "typical formulation" data should not be confused with product-specific data (Table B) which are required on each formulation. Product-specific data are further explained in Chapter IV of this document.

## C. Options Available for Complying With Requirements to Submit Data

Within 90 days of your receipt of this Notice you must submit to EPA a completed copy of the form entitled "FIFRA Section 3(c)(2)(B) Summary Sheet" [EPA Form 8580-1, Appendix II-2] for each of your products. On that form you must state which of the following methods you will use to comply with the requirements of this Notice:

1. (a) Notify EPA that you will submit the data, and

   (b) either submit the existing data you believe will satisfy the requirement, or state that you will generate the data by conducting testing. If the test procedures you will use deviate from (or are not specified in) the Registration Guidelines or protocols contained in the Reports of Expert Groups to the Chemicals Group, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must enclose the protocols you will use.

2. Notify EPA that you have entered into an agreement with one or more other registrants to jointly develop (or share in the cost of developing) the data. If you elect this option, you must notify EPA which registrant(s) are parties to the agreement.

3. File with EPA a completed "Certification of Attempt to Enter Into an Agreement With Other Registrants for Development of Data" (EPA Form 8580-6, Appendix II-3)*/

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*/ FIFRA Section 3(c)(2)(B) authorizes joint development of data by two or more registrants, and provides a mechanism by which parties can obtain an arbitrator's decision if they agree to jointly develop data but fail to agree on all the terms of

(Footnote continued at bottom of next page)

4. Request that EPA amend your registration by deleting the uses for which the data are needed. (This option is not available to applicants for new products.)

5. Request voluntary cancellation of the registration(s) of your products for which the data are needed. (This option is not available to applicants for new products.)

## D. Procedures for Requesting Changes in Testing Methodology and Extensions of Time

EPA recognizes that you may disagree with our conclusions regarding the appropriate ways to develop the required data or how quickly the data must be submitted. If the test procedures you plan to use deviate from (or are not specified in) the registration guidelines or protocols contained in the reports of the Expert Groups to the Chemical Groups, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must submit the protocol for Agency review prior to the initiation of the test.

If you think that you will need more time to generate the required data than is allowed by EPA's schedule, you may

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(Footnote continued from previous page)
the agreement. The statute does not compel any registrant to agree to develop data jointly.

In EPA's opinion, joint data development by all registrants who are subject to the requirements to submit a pertinent item of data or a cost-sharing agreement among all such registrants is clearly in the public interest. Duplication of testing could increase costs, tie up testing facilities, and subject an unnecessarily large number of animals to testing.

As noted earlier, EPA has discretion not to suspend the registration of a product when a registrant fails to submit data required under FIFRA Section 3(c)(2)(B). EPA has concluded that it is appropriate to exercise its discretion not to suspend in ways which will discourage duplicative testing. Accordingly, if (1) a registrant has informed us of his intent to develop and submit data required by this Notice; and (2) a second registrant informs EPA that it has made a bona fide offer to the first registrant to share in the expenses of the testing [on terms to be agreed upon or determined by arbitration under FIFRA Section 3(c)(2)(B)(iii)]; and (3) the first registrant has declined to agree to enter into a cost-sharing agreement, EPA will not suspend the second firm's registration. While the first firm is not required to agree to jointly develop data, EPA is not required to force the second firm to engage in economically inefficient duplicative testing in order to maintain its registration.

submit a request for an extension of time. The extension request must be submitted in writing to the Product Manager. The extension request should state the reasons why you conclude that an extension is appropriate. While EPA considers your request, you must strive to meet the deadline for submitting the required data.

## III. REQUIREMENT FOR SUBMISSION OF PRODUCT-SPECIFIC DATA

Note: This Section applies only to manufacturing-use products, not end-use products.

A necessary first step in determining which statements must appear on your product's label is the completion and submission to EPA of product-specific data* listed on the form entitled "Product Specific Data Report" (EPA Form 8580-4, Appendix III-1) to fill "gaps" identified by EPA concerning your product. Under the authority of FIFRA Section 3(c)(2)(B), EPA has determined that you must submit these data to EPA in order to register or reregister your product(s). All of these data must be submitted not later than six months after you receive this guidance document.

"Product-Specific Data Requirements for Manufacturing-Use Products" appearing in Table B permit you to determine which product-specific data you must submit. This can be done by examining the entries in the column of those tables entitled "Must Data Be Submitted Under §3(c)(2)(B)."

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*/ Product specific data pertains to data that support the formulation which is marketed; it usually includes product chemistry data and acute toxicology data.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Guideline Citation and Name of Test | Test$^2$ Substance | Guidline Status | Are Data Required$^{1, 3}$ Yes | No | Footnote Number |
|---|---|---|---|---|---|
| **§158.120 Product Chemistry** | | | | | |
| **Product Identity** | | | | | |
| 61-1 - Identity of Ingredients | TGAI | R | ☒ | ☐ | |
| 61-2 - Statement of Composition | TGAI | R | ☒ | ☐ | |
| 61-3 - Discussion of Formation of Ingredients | TGAI | R | ☒ | ☐ | |
| **Analysis and Certification of Product Ingredients:** | | | | | |
| 62-1 - Preliminary Analysis | TGAI | CR | ☒ | ☐ | |
| 62-2 - Certification of Limits | TGAI | R | ☒ | ☐ | |
| 62-3 - Analytical Methods for Enforcement of Limits | TGAI | R | ☒ | ☐ | |
| **Physical and Chemical Characteristics** | | | | | |
| 63-2 - Color | TGAI | R | ☒ | ☐ | |
| 63-3 - Physical State | TGAI | R | ☒ | ☐ | |
| 63-4 - Odor | TGAI | R | ☒ | ☐ | |
| 63-5 - Melting Point | TGAI | R | ☒ | ☐ | |
| 63-6 - Boiling Point | TGAI | R | ☐ | ☒ | |

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Guideline Citation and Name of Test | Test[2] Substance | Guidlines Status | Are Data Required[1, 3] Yes | Are Data Required[1, 3] No | Footnote Number |
|---|---|---|---|---|---|
| **§158.120 Product Chemistry** (continued) | | | | | |
| **Physical and Chemical Characteristics** (continued) | | | | | |
| 63- 7 - Density, Bulk Density, or Specific Gravity | TGAI | R | ☒ | ☐ | |
| 63- 8 - Solubility | TGAI or PAI | R | ☒ | ☐ | |
| 63- 9 - Vapor Pressure | PAI | R | ☒ | ☐ | |
| 63-10 - Dissociation Constant | PAI | R | ☒ | ☐ | |
| 63-11 - Octanol/Water Partition Coefficient | PAI | R | ☒ | ☐ | |
| 63-12 - pH | TGAI | R | ☒ | ☐ | |
| 63-13 - Stability | TGAI | R | ☒ | ☐ | |
| 63-20 - Corrosion Characteristics | TGAI | R | ☒ | ☐ | |
| **Other Requirements** | | | | | |
| 64- 1 - Submittal of Samples | C | CR | ☐ | ☒ | |

# TABLE A
# GENERIC DATA REQUIREMENTS FOR CARBOFURAN

## §158.120 Product Chemistry
(continued)

1 - If current information has been submitted to the Agency, the applicant should refer to it or resubmit the data.

2 - Test Substance: TGAI = Technical grade of active ingredient; ; PAI = Pure Active Ingredient; C = Either substance.

3 - Data must be submitted no later than November, 1984 .

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CHEMICAL CARBOFURAN

| Data Requirements | Composition[1] | Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2] |
|---|---|---|---|---|
| **§158.125 Residue Chemistry** | | | | |
| 171-4 - Nature of Residue (Metabolism) | | | | |
| - Plants | PAIRA | Yes | GS0101001,* GS0101002<br>GS0101003, GS0101004<br>GS0101005, GS0101006<br>GS0101007, GS0101008<br>GS0101009,* GS0101010*<br>GS0101011,* GS0101012* | No |
| - Livestock | PAIRA and plant metabolites | Yes | GS0101013, GS0101014<br>GS0101015,* GS0101016<br>GS0101017, GS0101018*<br>GS0101019* | No |
| 171-4 - Residue Analytical Method | | | | |
| - Plant residues | TGAI and metabolites | Yes | GS0101020, GS0101022<br>GS0101023, GS0101024*<br>GS0101025, GS0101026<br>GS0101027, GS0101028*<br>GS0101029,* GS0101030*<br>GS0101031, GS0101032*<br>GS0101034,* GS0101035*<br>GS0101036,* GS0101037*<br>GS0101038,* GS0101039*<br>GS0101040,* GS0101041*<br>GS0101042,* GS0101043*<br>GS0101044,* GS0101045*<br>GS0101046,* GS0101047* | No |
| - Animal residues | TGAI and metabolites | Yes | GS0101020, GS0101022<br>GS0101023, GS0101033* | No |

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*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirements | Composition$^1$ | Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)$^2$ |
|---|---|---|---|---|
| **§158.125 Residue Chemistry** (continued) | | | | |
| 171-4 - Storage Stability Data | PAI | Partially | GS0101047* | Yes$^3$ |
| 171-4 - Magnitude of the Residue-Residue Studies for Each Food Use | | | | |
| - Root and Tuber-Vegetable Group | | | | |
| o Potatoes | | | | |
| — Crop field trials | TEP | Partially | GS0101048, GS0101049<br>GS0101050,* GS0101051*<br>GS0101052,* GS0101053*<br>GS0101054,* GS0101055* | Yes$^4$ |
| — Processed Food/Feed | | | | |
| potato chips | EP | No | - | Yes$^5$ |
| potato, dried | EP | No | - | Yes$^5$ |
| potato granules | EP | No | - | Yes$^5$ |

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*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1]/ | Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]/ |
|---|---|---|---|---|
| **§158.125 Residue Chemistry** | | | | |
| 174-4 - Magnitude of the Residue - Residue Studies (continued) | | | | |
| ° Sugar beets | | | | |
| —Crop field trials | TEP | Partially | GS0101056* | Yes[6] |
| - Leaves of Root and Tuber Vegetables Group [7] | | | | |
| ° Sugar beet tops | | | | |
| —Field trials | TEP | Yes | GS0101056* | No |
| - Legume Vegetables (Succulent or Dried)[8] | | | | |
| ° Soybean | | | | |
| —Field trials | TEP | Yes | GS0101057 * | No |
| °Soybean soapstock | | Yes | GS0101057 * | No |
| -Foliage of Legume Vegetable Group[9] | | | | |
| °Soybean forage and hay | | Yes | GS0101057 * | No |

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*Data submitted by FMC Corporation. These data maybe compensable.

TABLE A

GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1]/ | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B) |
|---|---|---|---|---|
| §158.125 Residue Chemistry (continued) | | | | |
| 171-4 - Magnitude of the Residue - Residue Studies (continued) | | | | |
| -Fruiting Vegetables (Except Cucurbits) Group [10] | | | | |
| °Peppers | | Partially | GS0101058* | Yes[11] |
| -Fruiting Vegetables (Cucurbits) Group | | | | |
| °Cucumbers | | Yes | GS0101059* | No |
| °Melons | | Yes | GS0101060* | No |
| °Pumpkins | | Yes | GS0101060* | No |
| °Squash | | Yes | GS0101060* | No |
| -Small Fruits And Berries Group[12] | | | | |
| °Cranberries | | Yes | GS0101061* | No |

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*Data submitted by FMC Corporation. These data maybe compensable.

TABLE A
GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition$^{1}$/ | Does EPA Have Data To Satisfy This Requirment? (Yes, No or Partialy) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B) |
|---|---|---|---|---|
| **§158.125 Residue Chemistry** (continued) | | | | |
| 171-4 - Magnitude of the Residue - Residue Studies (continued) | | | | |
| °Grapes | | Partially | GS0101062,* GS0101063*<br>GS0101064,* GS0101065*<br>GS0101066,* GS0101067*<br>GS0101068* | Yes$^{13}$ |
| Processed comodities | | | | |
| Raisins | | Partially | GS0101062,* GS0101063*<br>GS0101065,* GS0101067*<br>GS0101068* | Yes$^{13}$ |
| Raisin waste | | Partially | GS0101062,* GS0101063*<br>GS0101065,* GS0101067*<br>GS0101068* | Yes$^{13}$ |
| Raisin pomace | | Partially | GS0101064,* GS0101065* | Yes$^{13}$ |
| Raisin juice | | No | | Yes$^{13}$ |
| °Stawberries | | Yes | GS0101069,* GS0101070* | No |
| -Cereal Grains Group$^{14}$ | | | | |
| °Barley | | Yes | GS0101069* | No |
| °Corn | | Partially | GS0101070,* GS0101071*<br>GS0101072* | Yes$^{15}$ |

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*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1]/ | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]/ |
|---|---|---|---|---|
| §158.125 Residue Chemistry (continued) | | | | |
| 174-4 - Magnitude of the Residue - Residue Studies (continued) | | | | |
| - Cereal Grains Group (continued) | | | | |
| °Oats | | Yes | GS0101073* | No |
| °Rice | | Partially | GS0101074 | Yes[16] |
| °Sorghum grain | | Partially | GS0101075,* GS0101076* | Yes[17] |
| °Wheat | | Yes | GS0101073,* GS0101077* | No |
| -Forage, Fodder,and Straw of Cereal Grains Group[18] | | | | |
| °Barley straw | | Yes | GS0101073* | No |
| °Corn forage and fodder | | Partially | GS0101078, GS0101079*<br>GS0101080,* GS0101081* | Yes [19] |
| °Oat straw | | Yes | GS0101073* | No |
| °Rice straw | | Partially | GS0101082 | Yes[20] |
| °Sorghum (grain) forage and fodder | | Partially | GS0101083,* GS0101084* | Yes[21] |
| °Wheat straw | | Yes | GS0101073,* GS0101085* | No |

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*Data submitted by FMC Corporation. These data maybe compensable.

TABLE A
GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1/] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2/] |
|---|---|---|---|---|
| §158.125 Residue Chemistry (continued) | | | | |
| 174-4 - Magnitude of the Residue - Residue Studies (continued). | | | | |
| - Non-Grass Animal Feeds (Forage, Fodder, Straw, and Hay) Group[22] | | | | |
| °Alfalfa forage and hay | | Partially | GS0101086 | Yes[23] |
| - Miscellaneous Crops | | | | |
| ° Bananas | | | | |
| — Crop field trials | TEP | Partially | GS0101087* | Yes[24] |
| ° Coffee | | | | |
| — Crop field trials | TEP | Partially | GS0101088* | Yes[25] |
| ° Cottonseed | TEP | Yes | GS0101089* | No |
| °Peanuts | TEP | Yes | GS0101090, GS0101091* | No[26] |
| °Sugarcane | TEP | Partially | GS0101092 | Yes[27] |
| °Tobacco | TEP | Partially | GS0101093* | Yes[28] |

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## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1/] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2/] |
|---|---|---|---|---|
| §158.125 Residue Chemistry (continued) | | | | |
| 174-4 - Magnitude of the Residue - Residue Studies (continued). | | | | |
| -Magnitude of the Residue in Meat,Milk,Poultry,and Eggs | | | | |
| °Cattle,goats,hogs,horses, and sheep | | Yes | GS0101094, GS0101095*<br>GS0101096* | No |
| °Milk | | Yes | GS0101097, GS0101098<br>GS0101099,* GS0101100* | No[29] |
| °Poultry and eggs | | Yes | GS0101101, GS0101102*<br>GS0101103* | No |

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*Data submitted by FMC Corporation. These data maybe compensable.

# TABLE A
# GENERIC DATA REQUIREMENTS FOR CARBOFURAN

## §158.125 Residue Chemistry
(continued)

1. Composition: TGAI = Technical grade of the active ingredient; PAIRA - Pure active ingredient, radiolabelled; TEP = Typical end-use product; EP = End-use product.
2. Data must be submitted no later than June 30, 1986.
3. Storage stability data are required for carbofuran and its metabolites of concern in or on corn grain and forage, alfalfa, animal tissues, and milk following storage at subfreezing temperatures for periods up to one year.
4. A crop-group tolerance is not appropriate for the following reasons: 1) the tolerance for potatoes is more than five times the tolerance for sugar beets, 2) the use pattern for sugar beets (10% granular soil applications only) differs substantially from the use pattern for potatoes (10-15% granular soil applications and/or 4 lb/gal flowable concentrate foliar applications), 3) there are gaps in the residue data supporting the currently established tolerances for potatoes and sugar beets, and 4) residue data would be required for two additional members of this group (carrots and radishes), however carbofuran formulations are currently registered for use only on potatoes and sugar beets within this crop group
5. Processing studies are required to determine residues of carbofuran and its metabolites in or on dried potatoes, and potato granules and chips.
6. A processing study is needed to determine residues of both carbamates and phenolic metabolites in dried sugar beet pulp, molasses, and refined sugar. This is necessary due to the uncertainty of the nature of the unextractable and unidentified polar materials encountered in the sugar beet metabolism study. Residues may be released during processing.
7. A crop-group tolerance is not appropriate for the following reason: Residue data are required for turnips.
8. A crop-group tolerance is not appropriate for the following reason: Residue data are required for several additional members of this group (dried and succulent beans, lima beans, and dried and succulent peas).
9. A crop-group tolerance is not appropriate for the following reason: Residue data are required for the forage and hay of two additional members of this group, beans and field peas, for which there are no tolerances.
10. A crop-group tolerance is not appropriate for the following reasons: 1) Residue data are required for one additional member of this group (tomatoes); carbofuran formulations are currently registered for use on peppers only. (Note: available residue data for tomatoes are not useful for purposes of establishing a group tolerance because they reflect different formulations,methods of application and dosage rates than those registered for peppers),and 2) additional residue data are required to support the currently established tolerance for carbofuran residues in or on fresh peppers.
11. The available data do not support the established tolerance for peppers because phenolic metabolites were not determined; carbamate residues in excess of 0.2 ppm were detected in or on peppers harvested later than the 21-day PHI; and because residue field trials were not conducted in the principal growing region of the crop. The following additional data are required: Residue data for fresh peppers at intervals up to 21 days after the last of two soil treatments at 2 and 3 (split applications) lbs. a.i./A or until residues are below the established tolerance; residues of carbofuran and its carbamate and phenolic metabolites must be determined. Studies must be conducted in CA, FL, and TX.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

### §158.125 Residue Chemistry
(continued)

12. A crop-group tolerance is not appropriate for the following reasons: 1) residue data are required for two additional members of this group (blueberry and a *Rubus* spp. such as blackberry) since carbofuran formulations are currently registered for use only on cranberries, grapes, and strawberries, 2) the registered use directions and limitations for cranberries, grapes, and strawberries are dissimilar, and 3) there are gaps in the residue data to currently established tolerances for grapes, dried pomace, and raison waste.
13. The available data do not support the established tolerances for grapes, dried pomice, and raisin waste. The following additional data are required: Residue analyses on raisin waste, wet and dry pomace, and juice processed from field-treated grapes which contain residues at or near the established tolerance.
14. A crop-group tolerance is not appropriate for the following reasons: 1) data gaps exist for the grains of corn, rice, and sorghum, 2) data pertaining to phenolic metabolite residues in or on wheat grain were translated to barley and oats, and 3) data from four representative commodities of this group were not submitted.
15. The available data do not support the established tolerance for the combined residues of carbofuran and its carbamate and phenolic metabolites which may result in or on fresh corn (kernels plus cobs with husks removed (K + CWHR)) and in or on corn grain from use of the registered formulations at the maximum application rate because phenolic residues were not determined. The following additional residue data are required: 1) A single soil application at-planting with one of the granular formulations at 3 lbs. a.i./A and a single soil application followed by two foliar applications at a total of 3 lbs. a.i./A (1 lb a.i./A/application) using ground and aerial equipment and subsequent residue analysis of the grain of field corn and popcorn and of fresh corn (K + CWHR) for carbofuran residues including phenolic metabolites of carbofuran, 2) no less than four foliar applications with the 4 lbs/gal flowable concentrate at 0.5 lbs. a.i./A using ground and aerial equipment and subsequent residue analysis of the grain of field and popcorn and of fresh corn (K + CWHR) for carbofuran residues including phenolic metabolites of carbofuran, and 3) fractionation studies are required, if residues are deatected in corn grain, to determine the necessity of food/feed additive tolerances for cannery waste (sweet corn only), milled products, and oil (crude and refined).
16. The available data do not support the established tolerance for carbofuran residues in or on rice due to the absence of data on phenolic metabolites and processed products. The following additional data are required: 1) data pertaining to carbofuran residues, including carbamate and phenolic metabolites, in or on rice grain from the following treatments: (a) a single postplant, broadcast water application of one of the granular formulations at 0.6 lb a.i./A within 21 days after flooding in one of the following states-AR, LA, MS, and/or TX and (b) a single preplant, broadcast soil application of a granular formulation at 0.5 lb a.i./A prior to flooding in CA. Either aerial or ground equipment may be used. 2) Data pertaining to carbamate and phenolic residues of carbofuran in the following processed products of rice grain: polished rice, hulls, milled products, and milled by-products.

## § 158.125 Residue Chemistry
(continued)

17. The available data do not support the established tolerance for carbofuran residues in or on sorghum grain because phenolic metabolites were not determined. The following additional data are required: 1) carbamate and phenolic residues of carbofuran must be determined in or on sorghum grain following a single, at-planting, hand or furrow application of a granular formulation at 2 lb a.i./A (the product must be soil-incorporated), and 3) a fractionation study will be required, if residues are detected in sorghum grain, to determine carbamate and phenolic residues of carbofuran in flour and milled products.
18. A crop group tolerance is not appropriate for the following reasons: a. Data gaps exist for corn and sorghum forage and fodder and rice straw. b. Data pertaining to phenolic metabolite residues in or on wheat straw were translated to barley and oat straws. Data from one of five representative commodities of this group are insufficient to translate to the entire group.
19. The available data do not support the established tolerance for the combined residues of carbofuran and its carbamate and phenolic metabolites in or on corn forage and fodder resulting from use of the registered formulations at the maximum application rate because phenolic residues were not determined. The following additional residue data are required: 1) a single soil application at-planting with one of the granular formulations at 3 lbs. a.i./A and a single soil application followed by two foliar applications at a total of 3 lb ai/A (1 lb. a.i./A/application) using ground and aerial equipment and subsequent residue analysis of the forage and fodder of either field, pop-, or sweet corn for carbofuran residues including phenolic metabolites of carbofuran, and 2) no less than four foliar applications with the 4 lbs./gal flowablel concentrate at 0.5 lbs. a.i./A using ground and aerial equipment and subsequent residue analysis of the forage and fodder of either field, pop-, or sweet corn for carbofuran residues including phenolic metabolites of carbofuran.
20. The available data do not support the established tolerance for carbofuran residues in or on rice straw because geographic representative data was inadequate and because data were not presented for phenolic metabolites. The following additional data are required: Carbamate and phenolic residue data for rice straw following: (i) a single post-plant water application of a granular formulation at 0.6 lb ai/A within 21 days of flooding (conducted in one of the following states: AR, LA, MS, and/or TX) and (ii) a single preplant soil application of a granular formulation at 0.5 lb. a.i./A prior to flooding (conducted in CA). Either aerial or ground equipment may be used.
21. The available data do not support the established tolerances for carbofuran residues in or on sorghum forage and fodder. The following additional data are required: 1) Carbamate and phenolic residues of carbofuran must be determined in or on sorghum forage and fodder following a single, at-planting, hand or furrow application of a granular formulation at 2 lb. a.i./A (the product must be soil-incorporated), and 2) carbamate and phenolic residues must be determined in sweet sorghum syrup to determine the necessity of a food additive tolerance.
22. A crop-group tolerance is not appropriate for the following reasons: 1) residue data are required for one additional member of this group (clover), ane 2) additional data are required to support the currently established tolerances for residues of carbofuran and its metabolites in or on alfalfa forage and hay.

## § 158.125 Residue Chemistry
(continued)

23. The available data do not support the tolerances for carbofuran and its carbamate and phenolic metabolites in or on alfalfa forage and hay. Data for two unregistered formulations (50% WP and 4% FlC) were apparently submitted in lieu of data for the registered 4 lbs./gal flowable concentrate and/or the 75% wettable powder. These data are insufficient to support the tolerances. The following additional data are required: 1) two foliar applications of the 4 lbs./gal flowable concentrate and 75% wettable powder both at consecutive rates of 1 and 0.5 lbs. a.i./A applied with aerial and ground equipment. Tests must be conducted in central and southern geographical locations. Forage and hay must be analyzed for both carbamate and phenolic residues. Alternatively the labels can be amended to restrict the number of applications to one per season. 2) Analyses are required to determine residues in alfalfa meal to determine the necessity of a feed additive tolerance.
24. The available data do not support the established tolerance for carbofuran in or on bananas. The following additional data are required: Phenolic residues of carbofuran in or on bananas following two hand-applied treatments with the 5% granular at 2.8 lbs. a.i./A.
25. The available data do not support the established tolerance for carbofuran residues in or on coffee beans. The following additional data are required: 1) concentrations of phenolic residues of carbofuran in or on coffee beans following the last of two hand-applied treatments with the 5% granular at 1.5 grams a.i./plant at Brazilian and Central American locations, and 2) if residues are detected in coffee beans, then a processing study will be required to determine carbamate and phenolic residues in roasted beans and instant coffee.
26. The available data support the established tolerances for carbofuran residues in or on peanut nutmeats and hulls, and no additional data are required for this commodity. However the established tolerances for carbofuran residues in or on peanuts and hulls were established based on the residues resulting from two seasonal applications (at-planting plus at-pegging) of carbofuran. Only one application per season is permitted at this time. The residues resulting from a single application are about 10 times less than those resulting from two treatments. Therefore, the tolerances should be reduced as follows: a) for peanuts, 0.6 parts per million (ppm) (of which no more than 0.2 ppm is carbamates); b) for peanut hulls, 1.5 ppm (of which no more than 0.3 ppm is carbamates); and c) for fatty acids of peanut soapstock, 6 ppm, of which no more than 1 ppm is carbamates, reflecting 2 ppm phenolic metabolites and 0.33 ppm carbamates in alkaline soapstock.
27. The available data do not support the established tolerance for carbofuran residues in or on sugarcane. The following additional data are required: 1) carbofuran residues in the processed commodities of sugarcane (molasses, refined sugar, and bagasse), 2) foliar applications (four or more)of the 4 lbs./gal flowable concentrate formulation 0.75 lb.a.i./A on sugarcane with aerial and ground equipment, 3) residue data for sugarcane following a single banded application of the 10 or 15% granular made to established cane after harvest, and 4) phenolic metabolites of carbofuran in addition to carbamates must be determined in or on sugarcane and its processed products from all of the above tests.

## § 158.125 Residue Chemistry
(continued)

28. The available data are not adequate to assess the exposure of man to residues of carbofuran in or on tobacco and its products. The following additional data are required; 1) both carbamate and phenolic residues must be determined in or on green tobacco following a single, soil-incorporated, preplant application of a granular or the flowable concentrate formulation at 6 lbs. a.i./A., and 2) pyrolysis products must be characterized. This must include carbamates, phenolic metabolites, and any pyrolysis products if different from the above.
29. The maximum expected dietary intake of carbofuran and its carbamate and phenolic metabolites in dairy cattle is 39 ppm based on a diet consisting of 80% alfalfa hay and 20% soybean forage or hay. A more reasonable diet of 80% alfalfa hay and 20% corn grain would result in a maximum combined dietary intake of 32 ppm carbofuran and metabolites. The cattle feeding data submitted in pesticide petitions 2F1283, 8F0711, and 1F1150 do not support the established tolerance for residues of carbofuran and metabolites in milk because dietary intake of carbofuran by dairy animals is higher now than at the time the tolerance for milk was established. The tolerance must be increased to 0.2 ppm, of which no more than 0.05 ppm is carbamates.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1] | Use Pattern[2] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3] |
|---|---|---|---|---|---|
| §158.130 Environmental Fate | | | | | |
| DEGRADATION STUDIES-LAB: | | | | | |
| 161-1 - Hydrolysis | TGAI or PAIRA | A,B,C,G | Yes | 00092799,* 00092800*<br>00092695* | No |
| Photodegradation | | | | | |
| 161-2 - In water | TGAI or PAIRA | A,B,C,G | Yes | 00092801* | No |
| 161-3 - On soil | TGAI or PAIRA | A,G | No | - | Yes |
| 161-4 - In Air | TGAI or PAIRA | A,G | No | - | Yes |
| METABOLISM STUDIES-LAB: | | | | | |
| 162-1 - Aerobic Soil | TGAI or PAIRA | A,B,G | Partially | 00092723,* 00092756*<br>00092758* | Yes[4] |
| 162-2 - Anaerobic Soil | TGAI or PAIRA | A | No | - | Yes |
| 162-3 - Anaerobic Aquatic | TGAI or PAIRA | C,G | No | - | Yes |
| 162-4 - Aerobic Aquatic | TGAI or PAIRA | C | No | - | Yes |
| MOBILITY STUDIES: | | | | | |
| 163-1 - Leaching and Adsorption/Desorption | TGAI or PAIRA | A,B,C,G | Partially | GS0101104, GS0101105 | Yes[5] |
| 163-2 - Volatility (Lab) | TEP | A,B | No | - | Yes |
| 163-2 - Volatility (Field) | TEP | A,B | No | | Yes |

*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1] | Use Pattern[2] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3] |
|---|---|---|---|---|---|
| **§158.130 Environmental Fate (continued)** | | | | | |
| **DISSIPATION STUDIES-FIELD:** | | | | | |
| 164-1 - Soil | TEP | A,B | Partially | 00090871* | Yes[6] |
| 164-2 - Aquatic (Sediment) | TEP | C | No | - | Yes |
| 164-3 - Forestry | TEP | G | No | - | Yes |
| 164-4 - Combination and Tank Mixes | - | - | N/A | - | No[8] |
| 164-5 - Soil, Long-term | TEP | A,B,C,G | No | - | Yes |
| **ACCUMULATION STUDIES:** | | | | | |
| 165-1 - Rotational Crops (Confined) | PAIRA | A,C | No | - | Yes |
| 165-2 - Rotational Crops (Field) | TEP | A,C | No | - | Yes |
| 165-3 - Irrigated Crops | TEP | C | No | - | Yes |
| 165-4 - In Fish | TGAI or PAIRA | A,B,C,G | No | - | Yes |
| 165-5 - In Aquatic Non-Target Organisms | TEP | C,G | No | - | Yes |
| **SPECIAL STUDIES** | | | | | |
| - Monitoring of Groundwater | TEP | A,B,C,G | No | - | Yes |

*Data submitted by Stauffer Chemical Company. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

### §158.130 Environmental Fate
(continued)

1. Composition: TGAI = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. Data must be submitted no later than the following time after the date of this standard 161-3---December 31, 1984; 162-1---June 30, 1986; 162-2---June 30, 1986; 162-3---June 30, 1986; 163-1---December 31, 1984; 164-1---June 30, 1986; 164-3---June 30, 1986.
4. Although the half-life of degradate 7-phenol was shown,and 3-hydroxycarbofuran was identified as an extactable degradate, identification and rate of decline of other degradates are still required.
5. A batch equilibrium study on one aquatic sediment from a representative use site and an aged leaching study are still needed.
6. One additional terrestrial field dissipation study with a granular formulation and studies on two sites with flowable concentrate and wettable powder formulations are required.
7. This Guidance Document deals only lwith single active ingredients.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition 1/ | Use Patterns 2/ | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? 3/ |
|---|---|---|---|---|---|
| **§158.135 Toxicology** | | | | | |
| **ACUTE TESTING:** | | | | | |
| 81-1 - Oral $LD_{50}$ - Rat | TGAI | A,B,C,G | Yes | 00063255, 00045107*<br>00063254, 00077329<br>00063258, 00063256<br>00077330, GS0101201**<br>GS0101202** | No |
| 81-2 - Dermal $LD_{50}$ | TGAI | A,B,C,G | Yes | 00063259, 00063260<br>00092562, 00092611<br>00092612, 00092613 | No |
| 81-3 - Inhalation $LC_{50}$ | TGAI | A,B,C,G | Yes | 00063250, 00063258<br>00083097, 00092614<br>00092616 | No |
| 81-4 - Primary Eye Irritation-Rabbit | TGAI | A,B,C,G | No | ----- | No 4/ |
| 81-5 - Primary Dermal Irritation | TGAI | A,B,C,G | No | ----- | No 5/ |
| 81-6 - Dermal Sensitization | TGAI | A,B,C,G | No | ----- | No 6/ |

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*Data submitted by FMC Corporation. These data maybe compensable.

**Data submitted by Farbenfabriken Bayer, A.G. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition 1/ | Use Patterns 2/ | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]/ |
|---|---|---|---|---|---|
| **§158.135 Toxicology** (continued) | | | | | |
| **Acute Testing:** (cont.) | | | | | |
| 81-7 - Acute Delayed Neurotoxicity - Hen | TGAI | A,B,C,G | No | ----- | No[7]/ |
| **SUBCHRONIC TESTING:** | | | | | |
| 82-1 - 90-Day Feeding - Rodent, Non-rodent | | | | | No[10] |
| 82-2 - 21-Day Dermal | TGAI | A,B,C,G | No | ----- | Yes[9] |
| 82-3 - 90-Day Dermal | TGAI | A,B,C,G | No | ----- | No[8]/ |
| 82-4 - 90-Day Inhalation - Rat | TGAI | A,B,C,G | No | ----- | Yes |
| 82-5 - 90-Day Neurotoxicity-Hen/Mammal | TGAI | A,B,C,G | No | ----- | No[7]/ |

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | 1/ Composition | Use 2/ Pattern | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)? | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?3/ |
|---|---|---|---|---|---|
| §158.135 Toxicology (continued) | | | | | |
| CHRONIC TESTING: | | | | | |
| 83-1 - Chronic Toxicity - 2 species: | | | | | |
| Rodent | TGAI | A,B,C,G | Yes | 00030512, 00030513<br>00030516 | No |
| Non-rodent | TGAI | A,B,C,G | Yes | GS0101203* | No |
| Dog (1 yr.) | TGAI | A,B,C,G | Yes | GS0101203* | No |
| 83-2 - Oncogenicity Study - 2 species: | | | | | |
| Rat (2 yr.) | TGAI | A,B,C,G | Yes | 00030516* | No |
| Mouse (2 yr.) | TGAI | A,B,C,G | Yes | 00030512,* 00030513* | No |
| 83-3 - Teratogenicity - 2 species | | | | | |
| Rat | TAIG | A,B,C,G | Yes | 00058609* | No |
| Rat | TAIG | A,B,C,G | Yes | 00058610* | No |
| Rabbit | TAIG | A,B,C,G | Yes | 00076762* | No |
| 83-4 - Reproduction, 2-generation Rat | TGAI | A,B,C,G | Yes | 00030514* | No |

*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | 1/ Composition | Use 2/ Pattern | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)? | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?3/ |
|---|---|---|---|---|---|
| **§158.135 Toxicology (continued)** | | | | | |
| **MUTAGENICITY TESTING:** | | | | | |
| 84-2 - Gene Mutation -Point mutation in S. typhimurium (Ames Test) | TGAI | A,B,C,G | Yes | 00059749* | No |
| 84-2 - Chromosomal Aberration -Induction of Mitotic Recombination | TGAI | A,B,C,G | Yes | 00059749* | No |
| 84-2 - Other Mechanisms of Mutagenicity | | | | | |
| -DNA Repair | TGAI | A,B,C,G | Yes | 00059749* | No |
| -Unscheduled DNA Synthesis | TGAI | A,B,C,G | Yes | 00059749* | No |
| **SPECIAL TESTING:** | | | | | |
| 85-1 - General Metabolism | TGAI | A,B,C,G | Yes | 05008717 | No |

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*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARROFURAN

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**§158.135 Toxicology**
(continued)

1/ Composition: TGAI = Technical grade of the active ingredient.

2/ The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop: D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.

3/ Data must be submitted no later than December 31, 1984.

4/ A Primary Eye Irritation Study on the technical does not need to be done since the acute dermal toxicity of carbofuran technical is Category I toxicity. This is because levels to assess irritation could not be reached because death would occur before eye irritation could be achieved. The data requirement is waived.

5/ Primary Dermal Irritation is not a data gap since carbofuran acute toxicity is Category I. Levels high enough to cause dermal irritation would cause death. The data requirement is waived.

6/ A dermal sensitization study is required if repeated contact with human skin is expected to occur. However, it is believed that cholinergic poisoning signs pre-empt observation of skin sensitization by technical carbofuran. This test is waived.

7/ Only organophosphorous pesticides are required for delayed neurotoxicity ( acute or 90-day) in accordance with §158.135.

8/ Prolonged or purposeful exposure to the skin is not expected. It is expected that a 21-day dermal study will be adequate to assess repeated dermal exposure expected for worker exposure.

9/ Certain use patterns of carbofuran can result in multiple applications per season and certain types of field work, such as, handpicked crops and operations like detassling corn for hybrid seed production can lead to significant dermal exposure. Accordingly, repeated dermal exposure (21-dermal) must be tested. This test will replace a previous dermal test (20 days on the backs of rabbits) done by IBT (#R3891) which was subsequently invalidated.

10/ Not required if valid chronic studies have been reviewed (see 83-1, 83-2, 83-3, and 83-4).

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1] | Use Pattern[2] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3] |
|---|---|---|---|---|---|
| §158.140 Reentry Protection | | | | | |
| 132-1 - Foliar Dissipation | TEP | A,B,G | Partially | 00092777,* 00092778*<br>00092779* | Yes[4] |
| 132-2 - Soil Dissipation | TEP | A,B,G | Partially | 00092777,* 00092778*<br>00092779* | Yes |
| 132-3 - Dermal Exposure | TEP | A,B,G | Partially | 00092777,* 00092778*<br>00092779* | Yes |
| 132-4 - Inhalation Exposure | TEP | A,B,G | Partially | 00092777,* 00092778*<br>00092779* | Yes |

1. Comosition: TGAI = Technical grade of the active ingredient; PAIA = Pure active ingredient, radiolabelled; TEP = Typical end-use product.
2. The usepatterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food-Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. Data must be submitted no later than June 30, 1986.
4. Data are required on human exposure expected from dislodgeable residues shown at different time intervals. Decline in micrograms/$cm^2$ leaf surface is insufficient.

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*Data submitted by FMC Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1] | Use Pattern[1] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2] |
|---|---|---|---|---|---|
| **§158.145 Wildlife and Aquatic Organisms** | | | | | |
| **AVIAN AND MAMMALIAN TESTING** | | | | | |
| 71-1 - Avian Oral $LD_{50}$ | TGAI | A,B,C,G | Yes | 05003462,* GS0101301<br>GS0101302, 05003191 | No |
| 71-2 - Avian Dietary $LC_{50}$ | TGAI | A,B,C,G | Yes | 00025997,**00025998**<br>00088881, 00092739* | No |
| 71-4 - Avian Reproduction | TGAI | A,B,C,G | Yes | 00129509***00129501* | No |
| 71-5 - Simulated and Actual Field Testing - Mammals and Birds | TEP | A,B,C,G | Partial | 00038261,* 00057295<br>00096742,**00130418*<br>00130419,* GS0101307<br>GS0101308, GS0101309 | Yes[3,4] |
| **AQUATIC ORGANISM TESTING** | | | | | |
| 72-1 - Freshwater Fish $LC_{50}$ | TGAI | A,B,C,G | Yes | 00025999,**GS0101306 | No |
| | TEP | A,C,G | Partial | 00092703, 00092704<br>00092705, 00092706<br>00092707, GS0101306 | Yes[5] |
| 72-2 - Acute $LC_{50}$ Freshwater Invertebrates | TGAI | A,B,C,G | Partial | 00025999,**00092708 | Yes |
| 72-3 - Acute $LC_{50}$ Estuarine and Marine Organisms | TGAI | A,B,C | No | | Yes[6] |
| | TEP | A,C | No | | Reserved[7] |
| 72-4 - Fish Early Life Stage and Aquatic Invertebrate Life-Cycle | TGAI | A,B,C,G | Yes | GS0101303, GS0101304<br>GS0101305 | No |

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*Data submitted by FMC Corporation. These data maybe compensable.
**Data submitted by Chevron Chemical Company. These data maybe compensable.
***Data submitted by S.C. Johnson and Sons. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | Composition[1] | Use Pattern[1] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2] |
|---|---|---|---|---|---|
| §158.145 Wildlife and Aquatic Organisms (cont.) | | | | | |
| 72-5 Fish life cycle - estuarine | TGAI | A,B,C,G | No | | Reserved[7] |
| 72-7 Simulated or Actual Field Testing-Aquatic Organisms | TEP | A,B,C,G | No | | Reserved[8] |

# TABLE A
# GENERIC DATA REQUIREMENTS FOR CARBOFURAN

## §158.145 Wildlife and Aquatic Organisms (cont.)

1 Composition of the material to be tested is technical grade unless otherwise specified. The compositions and use patterns are coded as follows: TGAI=Technical Grade Active Ingredient; TEP=Typical End use Products; A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic; G=Forestry; H=Domestic Outdoor; I=Indoor.
2 Data must be submitted no later than December 31, 1985.
3 Available data indicate that granular formulations will result in primary and secondary poisoning of avian species. Extensive multi-year monitoring of avian populations,with special emphasis on raptorial birds,is required in areas of heavy use (i. e. corn belt) and in areas of early planting where high densities of wintering birds utilize treated fields.
4 The methodology employed in the field study with 4F on alfalfa is inadequatly described. Before a final decision is made on the study certain questions must be answered.
5 Acute toxicity testing on representative end use products is required for sugarcane, rice, and forest uses.
6 Required to support such uses as sugarcane and rice.
7 Sheepshead minnow early life-stage, mysid shrimp life-cycle and formulated product test requirements are reserved pending receipt of estuarine acute toxicity data and environmental fate data.
8 The requirement for simulated or actual field testing for aquatic organisms is reserved pending review of the environmental fate data for carbofuran.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirement | 1/ Composition | Use 2/ Pattern | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B) |
|---|---|---|---|---|---|
| **§158.155 Nontarget Insect** | | | | | |
| **NONTARGET INSECT TESTING - POLLINATORS:** | | | | | |
| 141-1 - Honey bee acute contact $LD_{50}$ | TGAI | A,B,C,G | Yes | 00036935* | No |
| 141-2 - Honey bee - toxicity of residues on foliage | TEP | A,B,C,G | Yes | 00001361, 00060628<br>00077415 | No |
| 141-3 - Wild bees important in alfalfa pollination - toxicity of residues on foliage | TEP | A,B,C,G | Yes | 00045046** | No |
| 141-4 - Honey bee subacute feeding study | (Reserved)$^4$ | | | | |
| 141-5 - Field testing for pollinators | TEP | A,B,C,G | No | - | No$^3$ |
| **NONTARGET INSECT TESTING-AQUATIC INSECTS:** | | | | | |
| 142-1 - Acute toxicity to aquatic insects | (Reserved)$^5$ | | | | |
| 142-2 - Aquatic insect life-cycle study | (Reserved)$^5$ | | | | |
| 142-3 - Simulated or actual field testing for aquatic insects | (Reserved)$^5$ | | | | |

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*Data submitted by FMC Corporation. These data maybe compensable.

**Data submitted by Ciba-Geigy Corporation. These data maybe compensable.

## TABLE A
## GENERIC DATA REQUIREMENTS FOR CARBOFURAN

| Data Requirment | Composition[1] | Use Pattern[2] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3] |
|---|---|---|---|---|---|
| 143-1 thru 143-3 - NONTARGET INSECT TESTING-PREDATORS AND PARASITES | (Reserved)[5] | | | | |

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1/ Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.
2/ The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic,Food Crop: D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food, G=Forestry; H=Domestic Outdoor; I=Indoor.
3/ Data required only if product is intended for foliar application to alfalfa grown for seed.
4/ Reserved pending development of test method; when established, this requirement will be imposed on a case-by-case basis.
5/ Reserved pending decision as to whether data requirement should be established.

## TABLE B
## PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CARBOFURAN[1]

| Guideline Citation and Name of Test | Test[2] Substance | Guidline Status | Are Data[3] Required Yes | No | Footnote Number |
|---|---|---|---|---|---|
| **§158.120 Product Chemistry** | | | | | |
| **Product Identity** | | | | | |
| 61-1 - Identity of Ingredients | MP | R | ☒ | ☐ | |
| 61-2 - Statement of Composition | MP | R | ☒ | ☐ | |
| 61-3 - Discussion of Formation of Ingredients | MP | R | ☒ | ☐ | |
| **Analysis and Certification of Product Ingredients:** | | | | | |
| 62-1 - Preliminary Analysis | MP | R | ☒ | ☐ | |
| 62-2 - Certification of Limits | MP | R | ☒ | ☐ | |
| 62-3 - Analytical Methods for Enforcement of Limits | MP | R | ☒ | ☐ | |
| **Physical and Chemical Characteristics** | | | | | |
| 63-2 - Color | MP | R | ☒ | ☐ | |
| 63-3 - Physical State | MP | R | ☒ | ☐ | |
| 63-4 - Odor | MP | R | ☒ | ☐ | |
| 63-7 - Density, bulk density, or specific gravity | MP | R | ☒ | ☐ | |

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CARBOFURAN[1]

| Guideline Citation and Name of Test | Test[2] Substance | Guidlines Status | Are Data[3] Required | | Footnote Number |
|---|---|---|---|---|---|
| | | | Yes | No | |
| **§158.120 Product Chemistry** (continued) | | | | | |
| 63-12 - pH | MP | R | ☒ | ☐ | |
| 63-14 - Oxidizing or reducing action | MP | CR | ☒ | ☐ | |
| 63-15 - Flammability | MP | CR | ☒ | ☐ | |
| 63-16 - Explodability (Combustible Liquids Only) | MP | R | ☒ | ☐ | |
| 63-17 - Storage Stability | MP | R | ☒ | ☐ | |
| 63-18 - Viscosity | MP | CR | ☒ | ☐ | |
| 63-19 - Miscibility | MP | CR | ☒ | ☐ | |
| 63-20 - Corrosion Characteristics | MP | R | ☒ | ☐ | |
| **Other Requirements** | | | | | |
| 64- 1 - Submittal of Samples | PAI | CR | ☐ | ☒ | |

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1 - If current information has been submitted to the Agency, the applicant should refer to it or resubmit the data.

2 - Composition: MP= Manufacturing-Use Product; PAI= Pure Active Ingredient.

3 - Data must be submitted no later than November, 1984 .

## TABLE B
## PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CARBOFURAN

| Data Requirement | Composition 1/ | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? |
|---|---|---|---|---|
| §158.135 Toxicology | | | | |
| ACUTE TESTING | | | | |
| 81-1 - Oral $LD_{50}$ -Rat | MP | Yes | 00063255, 00045107<br>00063254, 00077329<br>00063258, 00063256<br>00077330, GS0101201<br>GS0101202 | No |
| 81-2 - Dermal $LD_{50}$ | MP | Yes | 00063259, 00063260<br>00092562, 00092611<br>00092612, 00092613 | No |
| 81-3 - Acute Inhalation Toxicity-Rat | MP | Yes | 00063250, 00063258<br>00083097, 00092614<br>00092616 | No |
| 81-4 - Primary Eye Irritation-Rabbit | MP | No | -------- | No[2] |
| 81-5 - Primary Dermal Irritation | MP | No | -------- | No[3] |
| 81-6 - Dermal Sensitization | MP | No | -------- | No[4] |

## TABLE B
## PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CARBOFURAN

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§158.135 Toxicology
(continued)

1/ Composition: MP = Manufacturing-use product.

2/ A Primary Eye Irritation Study on the technical does not need to be done since the acute dermal toxicity of carbofuran technical is Category I toxicity. This is because levels to assess irritation could not be reached because death would occur before eye irritation could be achieved.

3/ Primary Dermal Irritation is not a data gap since carbofuran acute toxicity is Category I. Levels high enough to cause dermal irritation would cause death.

4/ A Dermal Sensitization Study is required if repeated contact with human skin is expected to occur. It is believed that a dermal sensitization test would be difficult to achieve in the laboratory and that cholinergic poisoning signs pre-empt observation of skin sensitization by technical carbofuran. This test is waived.

## TABLE C
## PRODUCT SPECIFIC DATA REQUIREMENTS FOR END-USE PRODUCTS CONTAINING CARBOFURAN

| Data Requirement | Composition[1] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2] |
|---|---|---|---|---|
| §158.135 Toxicology | | | | |
| ACUTE TESTING | | | | |
| 81-1 - Acute Oral Toxicity-Rat | EP | No | ------------ | Yes |
| 81-2 - Acute Dermal Toxicity-Rabbit | EP | No | ------------ | Yes |
| 81-3 - Acute Inhalation Toxicity | EP | No | ------------ | Yes |
| 81-4 - Primary Eye Irritation | EP | No | ------------ | Yes |
| 81-5 - Primary Dermal Irritation | EP | No | ------------ | Yes |
| 81-6 - Dermal Sensitization | EP | No | ------------ | Yes |

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1/ Composition: EP = End-Use Product

2/ Data must be submitted no later than December 1984.

## TABLE C
## PRODUCT SPECIFIC DATA REQUIREMENTS FOR END-USE PRODUCTS CONTAINING CARBOFURAN

| Data Requirement | Composition[1] | Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially) | Bibliographic Citation | Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2] |
|---|---|---|---|---|
| §158.120 Product Chemistry | | | | |
| Other Requirements: | | | | |
| Particle assessment | EP | No | | Yes[3] |

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1/ Composition: EP = End-Use Product

2/ Data must be submitted no later than December 1984.

3/ Data are needed on a quantative assessment of the "fines" particles that could be respirable to mixer/loader applicators. These data will aid the Agency in determining inhalation exposure and the need for inhalation toxicity data.

## IV. SUBMISSION OF REVISED LABELING AND PACKAGING INFORMATION

Note: This section applies to end-use products only to the the extent described under Section II of this document. Otherwise, the following information pertains exclusively to manufacturing-use products.

The Agency requires applicants for registration or re-registration to ensure that each label (1) contains accurate, complete, and sufficient instructions and precautions, reflecting the results of data concerning the product and its ingredients, and (2) incorporates labeling format and terminology which are sufficiently standardized to avoid user confusion.

As part of your application, you will be required to submit draft labeling consistent with: applicable product-specific data; the precautionary statements and use directions; and the regulations concerning classification [40 CFR §162.11(c)], packaging [40 CFR §162.16], and labeling [40 CFR §162.10, Appendix IV-1 an IV-2], as indicated by the following paragraphs of this chapter of the guidance document.

If owners of currently registered products fail to submit revised labeling and packaging information complying with this Section and/or Section II, EPA may issue a notice of intent to cancel the registration under FIFRA §6(b)(1).

### A. Label Contents

40 CFR §162.10 (Appendix IV-1) requires that certain specific labeling statements must appear at certain locations on the label. This is referred to as format labeling. Specific label items listed below are keyed to Tables D, E, and F (Appendix IV-2).

Item 1. PRODUCT NAME - The name, brand, or trademark is required to be located on the front panel, preferably centered in the upper part of the panel. The name of a product will not be accepted if it is false or misleading. See Appendix IV-1. [40 CFR §162.10(b)]

Item 2. COMPANY NAME AND ADDRESS - The name and address of the registrant or distributor is required on the label. The name and address should preferably be located at the bottom of the front panel or at the end of the label text. See Appendix IV-1. [40 CFR §162.10(c)]

Item 3. NET CONTENTS - A net content statement is required on all labels. The preferred location is the bottom of the front panel immediately above the company name and address, or at the end of the label text. The net contents must be stated in terms of weight, expressed as avoirdupois pounds and ounces, and stated in terms of the largest suitable unit, i.e., "1 pound 10 ounces" rather than "26 ounces." In addition to the required units specified, net contents may be expressed in metric units. See Appendix IV-1. [40 CFR §162.10(d)]

Item 4. EPA REGISTRATION NUMBER - The registration number assigned to the pesticide product must appear on the label, preceded by the phrase "EPA Registration No.," or "EPA Reg. No." The registration number must be set in type of a size and style similar to other print on that part of the label on which it appears and must run parallel to it. The registration number and the required identifying phrase must not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency. See Appendix IV-1. [40 CFR §162.10(e)]

Item 5. EPA ESTABLISHMENT NUMBER - The EPA establishment number, preceded by the phrase "EPA Est." is the final establishment at which the product was produced, and may appear in any suitable location on the label or immediate container. It must also appear on the wrapper or outside container of the package if the EPA establishment registration number on the immediate container cannot be clearly read through such wrapper or container. See Appendix IV-1. [40 CFR §162.10(f)]

Item 6. INGREDIENT STATEMENT - An ingredient statement is required on the front panel and must contain the name and percentage by weight of each active ingredient and the total percentage by weight of all inert ingredients. The preferred location is immediately below the product name. The ingredient statement must run parallel with, and be clearly distinguished from, other text on the panel. It must not be placed in the body of other text. See Appendix IV-1. [40 CFR 162.10(g)]

Item 6A. POUNDS PER GALLON STATEMENT - For liquid agricultural formulations, the pounds per gallon of active ingredient must be indicated on the label.

Item 7. FRONT LABEL PRECAUTIONARY STATEMENTS - All labels are required to have precautionary statements grouped together on the front panel, preferably within a block outline. The table below shows the minimum type size requirements on various size labels, as set forth in the Regulations.

| Size of Label on Front Panel in Square Inches | Signal Word as Required Minimum Type Size All Capitals | "Keep Out of Reach of Children" as Required |
|---|---|---|
| 5 and under | 6 point | 6 point |
| above 5 to 10 | 10 point | 6 point |
| above 10 to 15 | 12 point | 8 point |
| above 15 to 30 | 14 point | 10 point |
| over 30 | 18 point | 12 point |

Item 7A. CHILD HAZARD WARNING STATEMENT - All labels are required to have the statement "Keep Out of Reach of Children" located on the front panel above the signal word except where contact with children during distribution or use is unlikely. See Appendix IV-1. [40 CFR §162.10(h)(1)(ii)]

Item 7B. SIGNAL WORD - The signal word (Caution, Warning, or Danger) is required on the front panel immediately below the child hazard warning statement. See Appendix IV-1. [40 CFR §162.10 (h)(1)(i)]

Item 7C. SKULL & CROSSBONES AND WORD "POISON" - On products assigned a toxicity Category I on the basis of oral, inhalation, or dermal toxicity, the word "Poison" shall appear on the label in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word poison. See Appendix IV-1. [40 CFR §162.10(h)(1)(i)]

Item 7D. STATEMENT OF PRACTICAL TREATMENT - A statement of practical treatment (first aid or other) shall appear on the label of pesticide products in toxicity Categories I, II, and III. See Appendix IV-1. [40 CFR §162.10(h)(1)(iii)]

Item 7E. REFERRAL STATEMENT - The statement "See Side (or Back) Panel for Additional Precautionary Statements" is required on the front panel for all products, unless all required precautionary statements appear on the front panel. See Appendix IV-1. [40 CFR §162.10(h)(1)(iii)]

Item 8. SIDE/BACK PANEL PRECAUTIONARY LABELING - The precautionary statements as listed below must appear together on the label under the heading "PRECAUTIONARY STATEMENTS." The preferred location is at the top of the side or back panel preceding the directions for use, and it is preferred that these statements be surrounded by a block outline. Each of the three hazard warning statements must be headed by the appropriate hazard title. See Appendix IV-1. [40 CFR §162.10 (h)(2)]

Item 8A. HAZARD TO HUMANS AND DOMESTIC ANIMALS - Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions taken to avoid accident, injury or damage. See Appendix IV-1. [40 CFR §162.10 (h)(2)(i)]

Item 8B. ENVIRONMENTAL HAZARD - Where a hazard exists to non-target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury, or damage. See Appendix IV-1. [40 CFR §162.10(h)(2)(ii)]

Item 8C. PHYSICAL OR CHEMICAL HAZARD

1. Flammability statement. Precautionary statements relating to flammability of a product are required to appear on the label if it meets the criteria in Appendix IV-3. The requirement is based on the results of the flashpoint determinations and flame extension tests required to be submitted for all products. These statements are to be located in the side/back panel precautionary statements section, preceded by the heading "Physical/Chemical Hazards." Note that no signal word is used in conjunction with the flammability statements.

2. Criteria for declaration of non-flammability. The following criteria will be used to determine if a product is non-flammable:

   a. A "non-flammable gas" is a gas (or mixture of gases) that will not ignite when a lighted match is placed against the open cylinder valve.

   b. A "non-flammable liquid" is one having a flashpoint greater than 350°F (177°C) as determined by the method specified in 40 CFR §163.61-8(c)(13) (ii) of Subpart D.

   c. A "non-flammable aerosol" is one which meets the following criteria:

      i. The flame extension is zero inches, using the method specified in 40 CFR §163.61-8(c)(13)(ii);

ii. There is no flash back; and

iii. The flashpoint of the non-volatile liquid component is greater than 350°F (177°C), determined by the method specified in 40 CFR §163.61-8(c)(13)(i).

3. Declaration of non-flammability. Products which meet the criteria for non-flammability specified above may bear the notation "non-flammable" or "nonflammable (gas, liquid, etc.)" on the label.

   It may appear as a substatement to the ingredients statement, or on a back or side panel, but shall not be highlighted or emphasized (as with an inordinately large type size) in any way that may detract from precaution.

4. Other physical/chemical hazard statements. When chemistry data submitted in accordance with 40 CFR §163.61-10(c) demonstrate hazards of a physical or chemical nature other than flammability, appropriate statements of hazard will be prescribed. Such statements may address hazards of explosivity, oxidizing or reducing capability, or mixing with other substances to produce toxic fumes.

Item 9. PRODUCT CLASSIFICATION: CLASSIFICATION LABELING REQUIREMENTS AND COMPLIANCE SCHEDULE - Section 3(d) of FIFRA requires that all pesticide formulations/uses be classified for either general or restricted use, and that those uses classified as restricted be limited to use by certified applicators or persons under their direct supervision (or subject to such other restrictions as may be imposed by regulation).

In the Registration Standard, the Agency has: (1) indicated certain formulations/uses to be restricted, based either on a previous classification determination made through the optional procedures of 40 CFR §162.30 or based on data already available to the Agency, or (2) indicated certain formulations/ uses to be unrestricted, based on data already available to the Agency, or (3) reserved any classification decision until appropriate short-term data are submitted. Uses have not been classified for general use at this time because such a decision requires an evaluation of chronic data, most of which has yet to be generated.

The product-specific data required by the Standard should be used by each registrant to make a classification determination following the criteria of 40 CFR §162.11(c) (Appendix V-4). The draft label(s) submitted to the Agency as part of your application should reflect this determination, and must be consistent with the terms of 40 CFR §162.10 and this guidance package with respect to label language and format for restricted use products. (No label changes with respect to classification are required for products with unrestricted uses.) The rationale supporting a classification proposal by the registrant that differs from a classification determination found in the Standard should be submitted with your application.

During the Agency's review of your application, your proposed classification determination will be evaluated in accordance with the provisions of 162.11(c). You will be notified of the Agency's classification evaluation.

## A. Classification Labeling Requirements

1. Unrestricted Uses - No label changes with respect to a classification statement are necessary for those formulations/uses that are unrestricted.

2. Restricted Uses - Pesticide products bearing directions for use for formulations/uses classified restricted shall bear statements of restricted use classification on the front panel as described below:

   a. Front panel statement of restricted use classification.

      i. At the top of the front panel of the label, set in type of the same minimum sizes as required for human hazard signal words (see table in 40 CFR §162.10(h)(1)(iv)), and appearing with sufficient prominence relative to other text and graphic material on the front panel to make it unlikely to be overlooked under customary conditions of purchase and use, the statement "Restricted Use Pesticide" shall appear.

ii. Directly below this statement on the front panel, a summary statement of the terms of restriction shall appear. If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification." If, however, other regulatory restrictions are imposed, the Administrator will define the appropriate wording for the terms of restriction by regulation.

3. Some But Not All Uses Restricted - If you determine that some uses should be classified RESTRICTED and some uses should be unrestricted, several courses of action detailed below are available:

   i. You may delete all RESTRICTED uses and submit a draft label of the registration of your product to reflect only those uses that are unrestricted.

   ii. Unrestricted uses may appear on a RESTRICTED label, but not vice versa. Therefore you have the option of using a RESTRICTED USE label bearing all of your directions for use. If you choose this option, you may not distinguish those uses that are not unrestricted from those that are RESTRICTED.

   iii. You may register two separate products with identical formulations, one containing only unrestricted uses and the other RESTRICTED uses. To do so, submit two applications for reregistration, each containing all forms and necessary labels. Both applications should be submitted simultaneously. Note that the product names will be assigned separate registration numbers.

## B. Compliance Schedules

1. Unclassified uses - None.

2. Restricted uses - The compliance schedule for restricted use products is as follows:

No product with a use classified for restricted use under this standard may be released for shipment by the registrant or producer after September 1, 1985, unless such product bears the restricted-use classification. All products still in channels of trade after September 1, 1986, must be labeled for restricted-use.

Item 10. MISUSE STATEMENT - The following statement is required on your label: "It is a violation of Federal law to use this product in a manner inconsistent with it's labeling." See Appendix IV-1. [40 CFR §162.10 (1)(2)(ii)]

Item 11A. STORAGE AND DISPOSAL BLOCK - All labels are required to bear storage and disposal statements. These statements are developed for specific containers, sizes, and chemical content. Make certain that the statement you use pertains specifically to your product. These instructions must be grouped and appear under the heading "Storage and Disposal" in the directions for use. This heading must be set in the same type sizes as required for the child hazard warning. Refer to Appendix IV-5 for the latest specific storage and disposal product label statements.

Item 11B. DIRECTIONS FOR USE - Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment. See Appendix IV-1. [40 CFR §162.10]

## B. Collateral Information

Bulletins, leaflets, circulars, brochures, data sheets, flyers, and other graphic printed matter which is referred to on the label or which is to accompany the product are termed collateral labeling. Such labeling may not bear claims or representations that differ in substance from those accepted in connection with registration of the product. It should be made part of the response to this notice and submitted for review.

## V. INSTRUCTIONS FOR SUBMISSION

All applications prepared in response to this Notice should be addressed as follows:

Jay Ellenberger
Product Manager 12
Phone No. (703) 557-2386
Registration Division (TS-767)
Office of Pesticide Programs
Environmental Protection Agency
Washington, D. C. 20460

For each product for which continued registration is desired:

1. Within 90 days from receipt of this document, you must submit the "FIFRA Section 3(c)(2)(B) Summary Sheet" EPA Form 8580-1. Refer to Appendix II-2 with appropriate attachments.

2. Within 6 months from receipt of this document registrants must submit:

    a. Confidential Statement of Formula, EPA Form 8570-4.

    b. Product Specific Data Report, EPA Form 8580-4 (Appendix III-1).

    c. Two copies of any required product-specific data.

    d. Two copies of draft labeling, including the label and associated brochures. If current labeling conforms to the requirements of this guidance document and the results of the short-term data, the registrant may submit such labeling. (End-use product labeling needs to comply specifically with the instruction in Section II of this guidance document.) The labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for stortage in 8-1/2 x 11 inch files. The draft label must indicate the intended colors of the final label, clear indication of the front panel label, and the intended type sizes of the text.

3. Within the time set forth in Table A, all generic data must be submitted by the affected registrant(s).

Note: If for any reason any required test is delayed or aborted so that meeting the agreed submission time will be delayed, notify the Product Manager listed above.

After the Supreme Court has ruled on the Monsanto Decision, you will be informed as to when you must submit your Application for Amended Pesticide Registration (EPA Form 8570-1) and the associated data support information.

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APPENDIX II-2

*OMB Approval No. 2000-0468 (Expires 12-31-83)*

| | |
|---|---|
| **FIFRA SECTION 3(C)(2)(B) SUMMARY SHEET** | **EPA REGISTRATION NO.** |
| **PRODUCT NAME** | |
| **APPLICANT'S NAME** | **DATE GUIDANCE DOCUMENT ISSUED** |

With respect to the requirement to submit "generic" data imposed by the FIFRA section 3(C)(2)(B) notice contained in the referenced Guidance Document, I am responding in the following manner:

☐ 1. I will submit data in a timely manner to satisfy the following requirements. If the test procedures I will use deviate from (or are not specified in) the *Registration Guidelines* or the *Protocols* contained in the *Reports of Expert Groups to the Chemicals Group, OECD Chemicals Testing Programme*, I enclose the protocols that I will use:

☐ 2. I have entered into an agreement with one or more other registrants under FIFRA section 3(C)(2)(B)(ii) to satisfy the following data requirements. The tests, and any required protocols, will be submitted to EPA by:

**NAME OF OTHER REGISTRANT**

☐ 3. I enclose a completed "Certification of Attempt to Enter Into an Agreement with Other Registrants for Development of Data" with respect to the following data requirements:

☐ 4. I request that you amend my registration by deleting the following uses (this option is not available to applicants for new products):

☐ 5. I request voluntary cancellation of the registration of this product. (This option is not available to applicants for new products.)

| | | |
|---|---|---|
| **REGISTRANT'S AUTHORIZED REPRESENTATIVE** | **SIGNATURE** | **DATE** |

EPA Form [illegible]-1 (10-82)

APPENDIX II-3

OMB Approval No. 2000-0468 (Expires: 12-31-83)

## CERTIFICATION OF ATTEMPT TO ENTER INTO AN AGREEMENT WITH OTHER REGISTRANTS FOR DEVELOPMENT OF DATA

*(To qualify, certify ALL four items)*

1. I am duly authorized to represent the following firm(s) who are subject to the requirements of a Notice under FIFRA Section 3(c)(2)(B) contained in a Guidance Document to submit data concerning the active ingredient:

**GUIDANCE DOCUMENT DATE**

**ACTIVE INGREDIENT**

| NAME OF FIRM | EPA COMPANY NUMBER |
|---|---|
| | |
| | |
| | |
| | |

(This firm or group of firms is referred to below as "my firm".)

2. My firm is willing to develop and submit the data as required by that Notice, if necessary. However, my firm would prefer to enter into an agreement with one or more other registrants to develop jointly, or to share in the cost of developing, the following required items or data:

3. My firm has offered in writing to enter into such an agreement. Copies of the offers are attached. That offer was irrevocable and included an offer to be bound by an arbitration decision under FIFRA Section 3(c)(2)(B)(iii) if final agreement on all terms could not be reached otherwise. This offer was made to the following firm(s) on the following date(s):

| NAME OF FIRM | DATE OF OFFER |
|---|---|
| | |
| | |
| | |
| | |

However, none of those firm(s) accepted my offer.

4. My firm requests that EPA not suspend the registration(s) of my firm's product(s), if any of the firms named in paragraph (3) above have agreed to submit the data listed in paragraph (2) above in accordance with the Notice. I understand EPA will promptly inform me whether my firm must submit data to avoid suspension of its registration(s) under FIFRA Section 3(c)(2)(B). (This statement does not apply to applicants for new products.) I give EPA permission to disclose this statement upon request.

| TYPED NAME | SIGNATURE | DATE |
|---|---|---|
| | | |

EPA Form 8580-6 (10-82)

# PRODUCT SPECIFIC DATA REPORT

EPA Registration No.________________Guidance Document for____________________________

Date______________________________

| Registration Guideline No. | Name of Test | Test not required for my product listed above (check below) | I am complying with data requirements by Citing MRID# | I am complying with data requirements by Submitting Data (Attached) | (For EPA Use Only) Accession Numbers Assigned |
|---|---|---|---|---|---|
| §158.20 PRODUCT CHEMISTRY | | | | | |
| 61-1 | Identity of ingredients | | | | |
| 61-2 | Statement of composition | | | | |
| 61-3 | Discussion of formation of ingredients | | | | |
| 62-1 | Preliminary analysis | | | | |
| 62-2 | Certification of limits | | | | |
| 62-3 | Analytical methods for enforcement limits | | | | |
| 63-2 | Color | | | | |
| 63-3 | Physical state | | | | |
| 63-4 | Odor | | | | |
| 63-5 | Melting point | | | | |
| 63-6 | Boiling point | | | | |
| 63-7 | Density, bulk-density, or specific gravity | | | | |
| 63-8 | Solubility | | | | |
| 63-9 | Vapor pressure | | | | |
| 63-10 | Dissociation constant | | | | |
| 63-11 | Octanol/water partition coefficient | | | | |
| 63-12 | pH | | | | |
| 63-13 | Stability | | | | |
| 63-14 | Oxidizing/reducing reaction | | | | |
| 63-15 | Flammability | | | | |
| 63-16 | Explodability | | | | |
| 63-17 | Storage stability | | | | |
| 63-18 | Viscosity | | | | |
| 63-19 | Miscibility | | | | |

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| 63-20 | Corrosion characteristics |  |  |  |  |
| 63-21 | Dielectric breakdown voltage |  |  |  |  |
| §158.135 TOXICOLOGY |  |  |  |  |  |
| 81-1 | Acute oral LD-50, rat |  |  |  |  |
| 81-2 | Acute dermal LD-50 |  |  |  |  |
| 81-3 | Acute inhalation, LC-50 rat |  |  |  |  |
| 81-4 | Primary eye irritation, rabbit |  |  |  |  |
| 81-5 | Primary dermal irritation |  |  |  |  |
| 81-6 | Dermal sensitization |  |  |  |  |

APPENDIX IV-2

## LABELING REQUIREMENTS OF THE FIFRA, AS AMENDED (REFER TO THE SAMPLE LABELS FOLLOWING)

| ITEM | LABEL ELEMENT | APPLICABILITY OF REQUIREMENT | PLACEMENT ON LABEL | | COMMENTS |
|---|---|---|---|---|---|
| | | | REQUIRED | PREFERRED | |
| 1 | Product name | All products | Front panel | Center front panel | |
| 2 | Company name and address | All products | None | Bottom front panel or end of label text | If registrant is not the producer, must be qualified by "Packed for . . .," "Distributed by. . .," etc. |
| 3 | Net contents | All products | None | Bottom front panel or end of label text | May be in metric units in addition to U.S. units |
| 4 | EPA Est. No. | All products | None | Front panel | Must be in similar type size and run parallel to other type. |
| 5 | EPA Reg. No. | All products | None | Front panel, immediately before or following Reg. No. | May appear on the container instead of the label. |
| 6A | Ingredients statement | All products | Front panel | Immediately following product name | Text must run parallel with other text on the panel. |
| 6B | Pounds/gallon statement | Liquid products where dosage given as lbs. ai/unit area | Front panel | Directly below the main ingredients statement | |
| 7 | Front panel precautionary statements | All products | Front panel | | All front panel precautionary statements must be grouped together, preferably blocked. |
| 7A | Keep Out of Reach of Children (Child hazard warning) | All products | Front panel | Above signal word | Note type size requirements. |
| 7B | Signal word | All products | Front panel | Immediately below child hazard warning | Note type size requirements. |

| ITEM | LABEL ELEMENT | APPLICABILITY OF REQUIREMENT | PLACEMENT ON LABEL | | COMMENTS |
|---|---|---|---|---|---|
| | | | REQUIRED | PREFERRED | |
| 7C | Skull & crossbones and word POISON (in red) | All products which are Category I based on oral, dermal, or inhalation toxicity | Front panel | Both in close proximity to signal word | |
| 7D | Statement of practical treatment | All products in Categories I, II, and III | Category I:<br>Front panel unless referral statement is used.<br>Others:<br>Grouped with side panel precautionary statements. | Front panel for all. | |
| 7E | Referral statement | All products where precautionary labeling appears on other than front panel. | Front panel | | |
| 8 | Side/back panel precautionary statements | All products | None | Top or side of back panel preceding directions for use | Must be grouped under the headings in 8A, 8B, and 8C; preferably blocked. |
| 8A | Hazards to humans and domestic animals | All products in Categories I, II, and III | None | Same as above | Must be preceded by appropriate signal word. |
| 8B | Environmental hazards | All products | None | Same as above | Environmental hazards include bee caution where applicable. |

| ITEM | LABEL ELEMENT | APPLICABILITY OF REQUIREMENT | PLACEMENT ON LABEL |  | COMMENTS |
|---|---|---|---|---|---|
|  |  |  | REQUIRED | PREFERRED |  |
| 8C | Physical or chemical hazards | All pressurized products, others with flash points under 150°F | None | Same as above |  |
| 9A | Restricted block | All restricted products | Top center of front panel | Preferably blocked | Includes a statement of the terms of restriction. The words "RESTRICTED USE PESTICIDE" must be same type size as signal word. |
| 9C | Misuse statement | All products | Immediately following statement of classification or ahead of directions for use |  |  |
| 10A | Re-entry statement | All cholinesterase inhibitors | In the directions for use | Immediately after misuse statement |  |
| 10C | Storage and disposal block | All products | In the directions for use | Immediately before specific directions for use or at the end of directions for use | Must be set apart and clearly distinguishable from from other directions for use. |
| 10D U.S. | Directions for use | All products | None | None | May be in metric as well as U.S. units |

Appendix IV-3

## PHYSICAL-CHEMICAL HAZARDS

| Criteria | Required Label Statement |
|---|---|
| I. Pressurized Containers | |
| A. Flashpoint at or below 20°F; or if there is a flashback at any valve opening. | Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| B. Flashpoint above 20°F and not over 80°F; or if the flame extension is more than 18 inches long at a distance of 6 inches from the valve opening. | Flammable. Contents under pressure. Keep away from heat, sparks, and flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| C. ALL OTHER PRESSURIZED CONTAINERS | Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| II. Non-Pressurized Containers | |
| A. Flashpoint at or below 20°F. | Extremely flammable. Keep away from fire, sparks, and heated surfaces. |
| B. Flashpoint above 20°F and over 80°F. | Flammable. Keep away from heat and open flame. |
| C. Flashpoint over 80°F and not over 150°F. | Do not use or store near heat and open flame. |
| D. Flashpoint above 150°F. | None required. |

## STORAGE AND DISPOSAL INSTRUCTIONS FOR PESTICIDES

All products are required to bear specific label instructions about storage and disposal. Storage and disposal instructions must be grouped together in the directions for use portion of the label under the heading STORAGE AND DISPOSAL. Products intended solely for domestic use need not include the heading "STORAGE AND DISPOSAL." The STORAGE AND DISPOSAL heading must appear in the minimum type size listed below:

| Size of label front panel in square inches | Required type size for the heading STORAGE AND DISPOSAL (all capitals) |
|---|---|
| 10 and under | .6 point |
| Above 10 to 15 | .8 point |
| Above 15 to 30 | 10 point |
| Over 30. | 12 point |

Storage and disposal instructions must be set apart and clearly distinguishable from other directions for use. Blocking storage and disposal statements with a solid line is suggested as a means of increasing their prominence.

### A. Storage Instructions:

All product labels are required to have appropriate storage instructions. Specific storage instructions are not prescribed. Each registrant must develop his own storage instructions, considering, when applicable, the following factors:

1. Conditions of storage that might alter the composition or usefulness of the pesticide. Examples could be temperature extremes, excessive moisture or humidity, heat, sunlight, friction, or contaminating substances or media.

2. Physical requirements of storage which might adversely affect the container of the product and its ability to continue to function properly. Requirements might include positioning of the container in storage, storage or damage due to stacking, penetration of moisture, and ability to withstand shock or friction.

3. Specifications for handling the pesticide container, including movement of container within the storage area, proper opening and closing procedures (particularly for opened containers), and measures to minimize exposure while opening or closing container.

4. Instructions on what to do if the container is damaged in any way, or if the pesticide is leaking or has been spilled, and precautions to minimize exposure if damage occurs.

5. General precautions concerning locked storage, storage in original container only, and separation of pesticides during storage to prevent cross-contamination of other pesticides, fertilizer, food, and feed.

6. General storage instructions for household products should emphasize storage in original container and placement in locked storage areas.

B. Pesticide Disposal Instructions:

The label of all products, except those intended solely for domestic use, must bear explicit instructions about pesticide disposal. The statements listed below contain the exact wording that must appear on the label of these products:

1. The labels of all products, except domestic use, must contain the statement, "Do not contaminate water, food, or feed by storage or disposal."

2. Except those products intended solely for domestic use, the labels of all products that contain active ingredients appearing on the "Acutely Hazardous" Commercial Pesticide Products List (RCRA "E" List) at the end of this appendix or are assigned to Toxicity Category I on the basis of oral or dermal toxicity, skin or eye irritation potential, or Toxicity Category I or II on the basis of acute inhalation toxicity must bear the following pesticide disposal statement:

   "Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

   The labels of all products, except those intended for domestic use, containing active or inert ingredients that appear on the "Toxic" Commercial Pesticide Products List (RCRA "F" List) at the end of this appendix or presently meet any of the criteria in Subpart C, 40 CFR 261 for a hazardous waste must bear the following pesticide disposal statement:

"Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

Labels for all other products, except those intended for domestic use, must bear the following pesticide disposal statement:

"Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility."

3. Products intended for domestic use only must bear the following disposal statement: "Securely wrap original container in several layers of newspaper and discard in trash."

C. Container Disposal Instructions

The label of each product must bear container disposal instructions appropriate to the type of container.

1. All products intended for domestic use must bear one of the following container disposal statements:

| Container Type | Statement |
|---|---|
| Non-aerosol products (bottles, cans, jars) | Do not reuse container (bottle, can, jar). Rinse thoroughly before discarding in trash. |
| Non-aerosol products (bags) | Do not reuse bag. Discard bag in trash. |
| Aerosol products | Replace cap and discard containers in trash. Do not incinerate or puncture. |

2. The labels for all other products must bear container disposal instructions, based on container type, listed below:

| Container Type | Statement |
|---|---|
| Metal containers (non-aerosol) | Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. |
| Plastic containers | Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. |
| Glass containers | Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures. |

Appendix IV-5
(continued)

| Container Type | Statement |
|---|---|
| Fiber drums with liners | Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum is contaminated and cannot be reused[1], dispose of in the same manner. |
| Paper and plastic bags | Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. |
| Compressed gas cylinders | Return empty cylinder for reuse (or similar wording). |

[1] Manufacturer may replace this phrase with one indicating whether and how fiber drum may be reused.

2. The labels for all other products must bear container disposal instructions, based on container type, listed on the first page of this Appendix.

Pesticides that are hazardous wastes under 40 CFR 261.33(e) and (f) when discarded.

## "Acutely Hazardous" Commercial Pesticides (RCRA "E" List) Active Ingredients, (no inerts):

Acrolein
Aldicarb
Aldrin
Allyl alcohol
Aluminum phosphide
4-Aminopyridine
Arsenic acid
Arsenic pentoxide
Arsenic trioxide
Calcium cyanide
Carbon disulfide
p-Chloroaniline
Cyanides (soluble cyanide salts, not specified elsewere)
Cyanogen chloride
2-Cyclohexyl-4,6-dinitrophenol
Dieldrin
0,0-Diethyl S-[2-ethylthio)ethyl] phosphorodithioate
    (disulfoton, Di-Syston)
0,0-Diethyl 0-pyrazinyl phosphorothioate (Zinophos)
Dimethoate
0,0-Dimethyl 0-p-nitrophenyl phosphorothioate (methyl parathion)
4,6-Dinitro-o-cresol and salts
4,6-Dinitro-o-cyclohexylphenol
2,4 Dinitrophenol
Dinoseb
Endosulfan
Endothall
Endrin
Famphur
Fluoroacetamide
Heptachlor
Hexanethyl tetraphosphate
Hydrocyanic acid
Hydrogen cyanide
Methomyl
alpha-Naphthylthiourea (ANTU)
Nicotine and salts
Octamethylpyrophosphoramide (OMPA, schradan)
Parathion

Appendix IV-5
(continued)

## "Acutely Hazardous" Commercial Pesticides (RCRA "E" List)
## Active Ingredients continued:

Phenylmercuric acetate (PMA)
Phorate
Potassium cyanide
Propargyl alcohol
Sodium azide
Sodium cyanide
Sodium fluoroacetate
Strychnine and salts
0,0,0,0-Tetraethyl dithiopyrophosphate (sulfotepp)
Tetraethyl pyrophosphate
Thallium sulfate
Thiofanox
Toxaphene
Warfarin
Zinc phosphide

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There are currently no inert ingredients for commercial pesticides on the "Acutely Hazardous" List (RCRA "E" List).

Appendix IV-5
(continued)

## "Toxic" Commercial Pesticide Products (RCRA "F" List) Active Ingredients:

Acetone
Acrylonitrile
Amitrole
Benzene
Bis(2-ethylhexyl)pthalate
Cacodylic acid
Carbon tetrachloride
Chloral (hydrate)
Chlordane (technical)
Chlorobenzene
4-Chloro-m-cresol
Chloroform
o-Chlorophenol
4-Chloro-o-toluidine hydrochloride
Creosote
Cresylic acid
Cyclohexane
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one
    (kepone, chlordecone)
1,2-Dibromo-3-chloropropane (DBCP)
Dibutyl phthalate
S-3,3-(Dichloroallyl diisopropylthiocarbamate (diallate, Avadex)
o-Dichlorobenzene
p-Dichlorobenzene
Dichlorodifluoromethane (Freon 12®)
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide (pronamide,Kerb)
Dichloro diphenyl dichloroethane (DDD)
Dichloro diphenyl trichloroethane (DDT)
Dichlorethyl ether
2,4-Dichlorophenoxyacetic, esters and salts (2,4-D)
1,2-Dichloropropane
1,3-Dichloropropane (Telone)
Dimethyl phthalate
Ethyl acetate
Ethyl 4,4'-dichlorobenzilate (chlorobenzilate)
Ethylene dibromide (EDB)
Ethylene dichloride
Ethylene oxide
Formaldehyde
Furfural
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hydrofluoric acid

## "Toxic" Commercial Pesticide Products (RCRA "F" List)
## Active Ingredients:

Isobutyl alcohol
Lead acetate
Lindane
Maleic hydrazide
Mercury
Methyl alcohol
Methyl bromide
Methyl chloride
2,2'-Methylenebis (3,4,6-trichlorophenol) (hexachlorophene)
Methylene chloride
Methyl ethyl ketone
4-Methyl-2-pentanone (methyl isobutyl ketone)
Naphthalene
Nitrobenzene
p-Nitrophenol
Pentachloroethane
Pentachloronitrobenzene (PCNB)
Pentaclorophenol
Phenol
Phosphorodithioic acid, 0,0-diethyl, methyl ester
Propylene dichloride
Pyridine
Resorcinol
Safrole
Selenium disulfide
Silvex
1,2,4,5-Tetrachlorobenzene
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
2,3,4,6-Tetrachlorophenol
Thiram
Toluene
1,1,1-Trichloroethane
Trichloroethylene
Trichloromonofluoromethane (Freon 11®)
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
Xylene

Appendix IV-5
(continued)

## "Toxic" Commercial Pesticide Products (RCRA "F" List) Inert Ingredients:

Acetone
Acetonitrile
Acetophenone
Acrylic acid
Aniline
Benzene
Chlorobenzene
Chloroform
Cyclohexane
Cyclohexanone
Dichlorodifluoromethane (Freon 12®)
Diethyl phthalate
Dimethylamine
Dimethyl phthalate
1,4-Dioxane
Ethylene oxide
Formaldehyde
Formic acid
Isobutyl alcohol
Meleic anhydride
Methyl alcohol (methanol)
Methyl ethyl ketone
Methyl methacrylate
Naphthalene
Saccharin and salts
Thiourea
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichlorofluoromethane (Freon 11®)
Vinyl chloride
Xylene